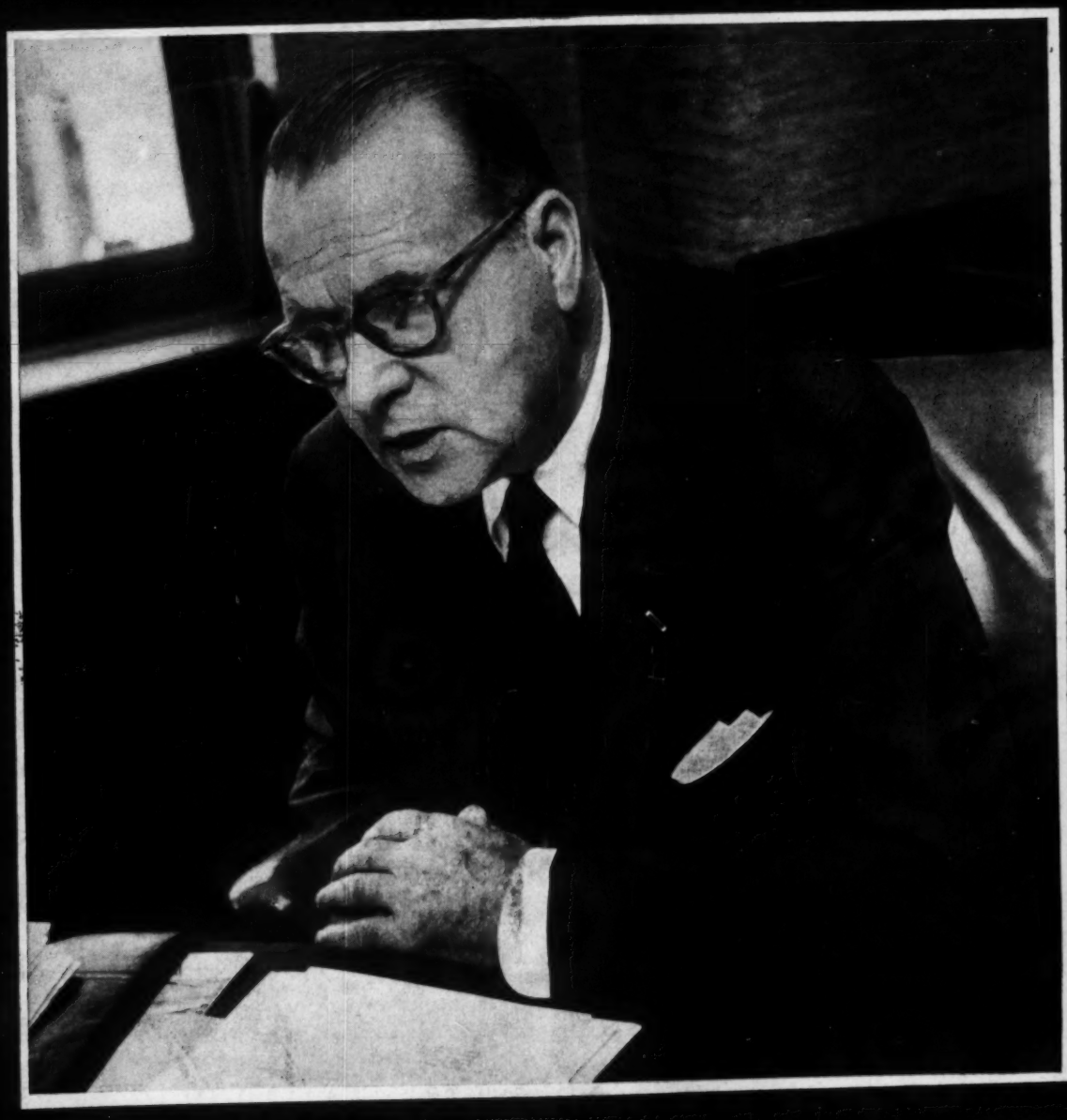
ENGINEERING NEWS-RECORD



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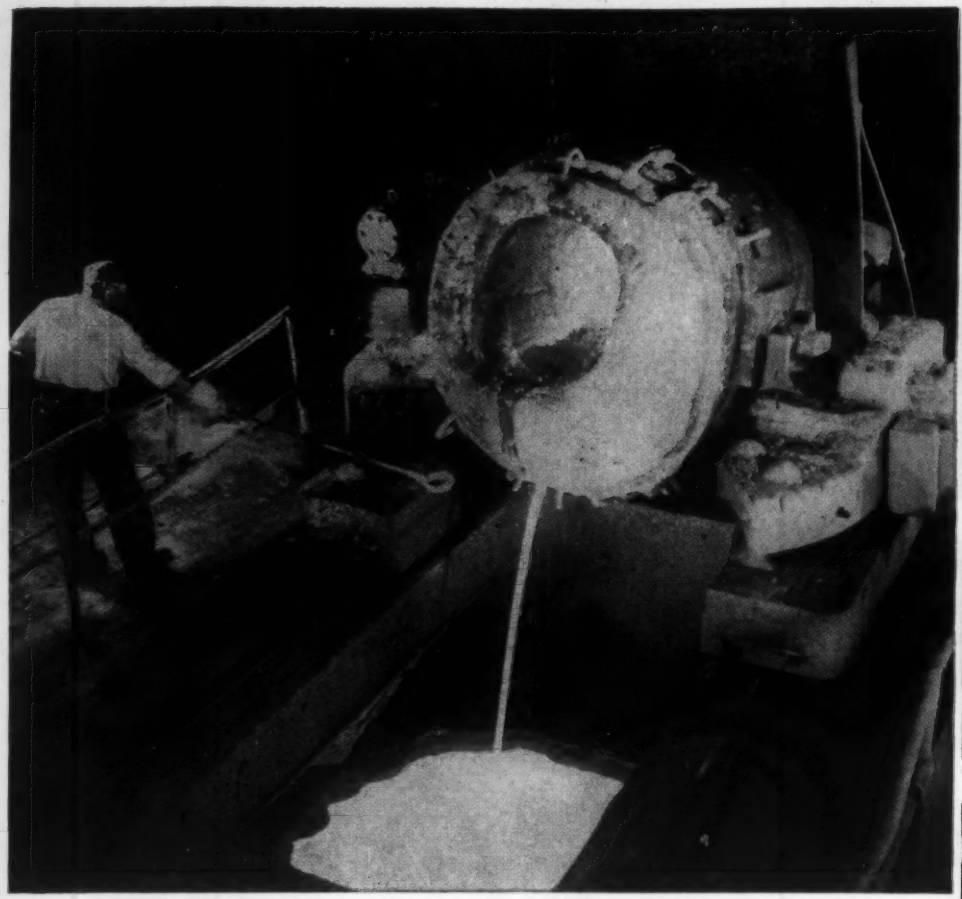
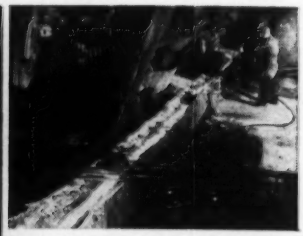
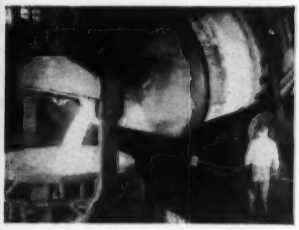


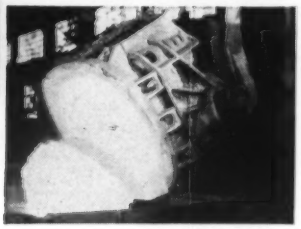


Melting pig iron in the cupolas

Purifying iron in bessemer



An exact iron silicate is tapped



"Sponge ball" goes to the press

This exclusive 5-minute operation gives **WROUGHT IRON** built-in protection against corrosion

The pig iron has been melted in the cupolas . . . purified by the bessemer converter. An exact iron silicate has been readied in special rotary furnaces and moved by ladle beneath the machine holding the highly refined, molten iron . . . everything is ready for the key step.

The signal is given. The processing machine tips its ladle forward. Molten refined iron flows at a controlled, predetermined rate into the ladle holding the melted silicate. This operation is shown above. The falling iron stream penetrates into the silicate, then separates into droplets. Liberated gas from within bursts apart the solidifying droplets. The shattered fragments settle continuously to form a "spongy mass"—welding hot—in the molten silicate.

This "sponge," weighing three tons or more, is pressed into a rectangular block called a "bloom." Giant rolling mills give final form to the useful material—WROUGHT IRON.

Because the thousands of fibers of silicate gathered in the mixing operation and distributed through the body of high-purity iron are unaffected by corrosion, they establish a "defense in depth" against corrosive attack. This is why wrought iron stays on the job longer, at lower cost per year.

Our booklet, *The ABC's of Wrought Iron*, tells more of this story. Send for your copy.

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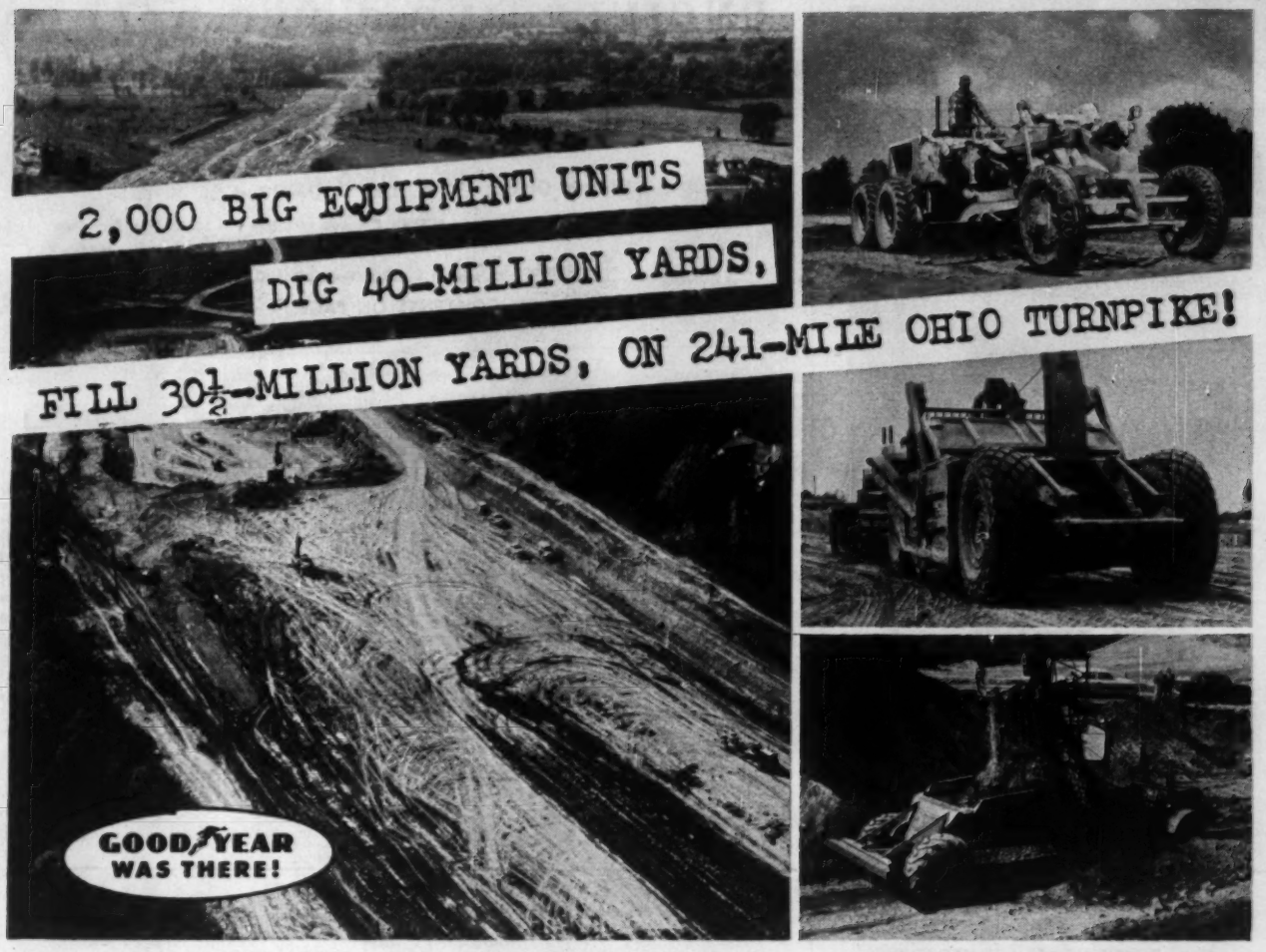

Soon to be humming to the tune of 39,000 vehicles a day, Ohio's new 241-mile toll road, of twin 24-foot pavements on 200 foot right of way, is taking less than 3 years from start to finish! This fast-stepping 20-hour-a-day pace is maintained by equipment drawn from all over the country—much of it rolling on Goodyear earth-mover and off-road tires built with 3-T NYLON Cord.

Look for this sign; there's a Goodyear dealer near you

YOU set the pace—
TIRES OF 3-T NYLON CORD CAN TAKE IT!

Tires built with Goodyear's *exclusive*-process 3-T NYLON Cord have been on the toughest, fastest-moving jobs for almost 2 years. In that time, they've proved themselves *the greatest moneysavers for truckers and contractors in 20 years!* 3-T NYLON CORD keeps bruise breaks and heat blowouts close to the vanishing point, virtually eliminates ply separation and flex failure — keeps tires in shape for many more re-lugs and recaps. If you want to cut your tire-cost-per-job, specify Goodyear 3-T Cord tires—Rayon or Nylon—for everything that rolls!

Goodyear, Truck Tire Dept., Akron 16, Ohio

FOR EACH JOB, THERE'S A COST-CUTTING GOODYEAR TIRE BUILT WITH 3-T NYLON CORD

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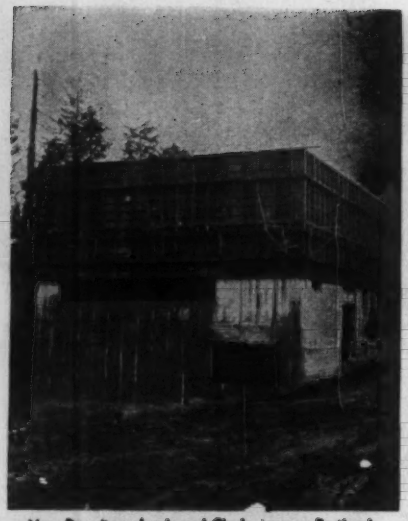
Road Lug, Sure-Grip, All-Weather—T. M.'s The Goodyear Tire & Rubber Company, Akron, Ohio



New Dormitory, Lewis and Clark Campus, Portland, Oregon, Donald M. Drake Company, Gen. Con.

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Robert F. Boger
Publisher

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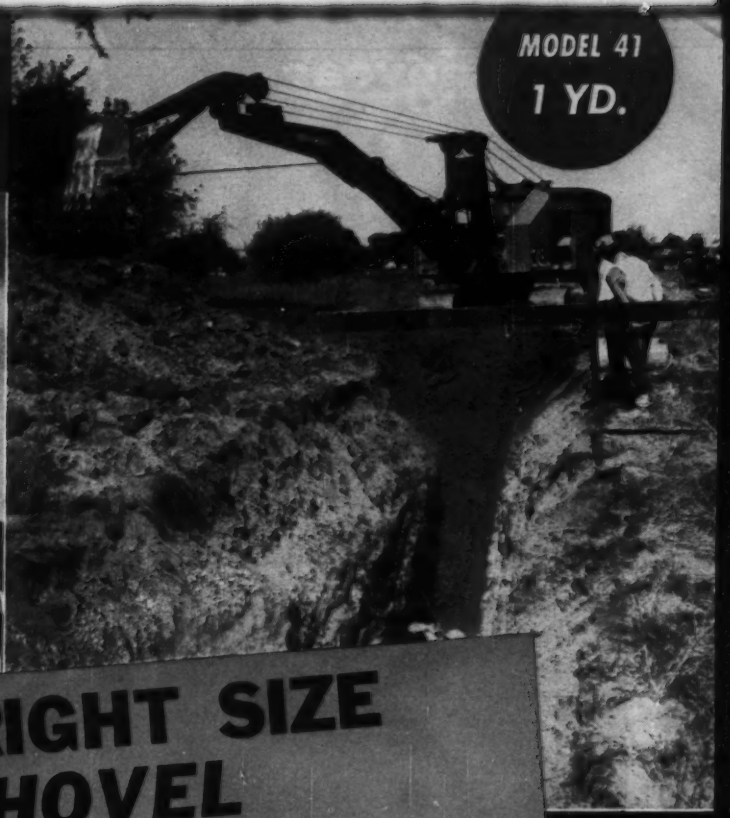

GET THE RIGHT SIZE *PULLSHOVEL* For Your Jobs

What size ditching and trenching job? Northwest has the rig for it—four sizes to choose from: ¾-yd., 1-yd., 1¾-yd. and 2½-yd. capacity!

When planning for your next Pullshovel job, remember, that every size of Northwest Pullshovel has been proved in service beyond any other similar equipment. Northwest Pullshovels are fast, give you plenty of reach and high output. Ask for a catalog and talk your problem over with a Northwest Man.

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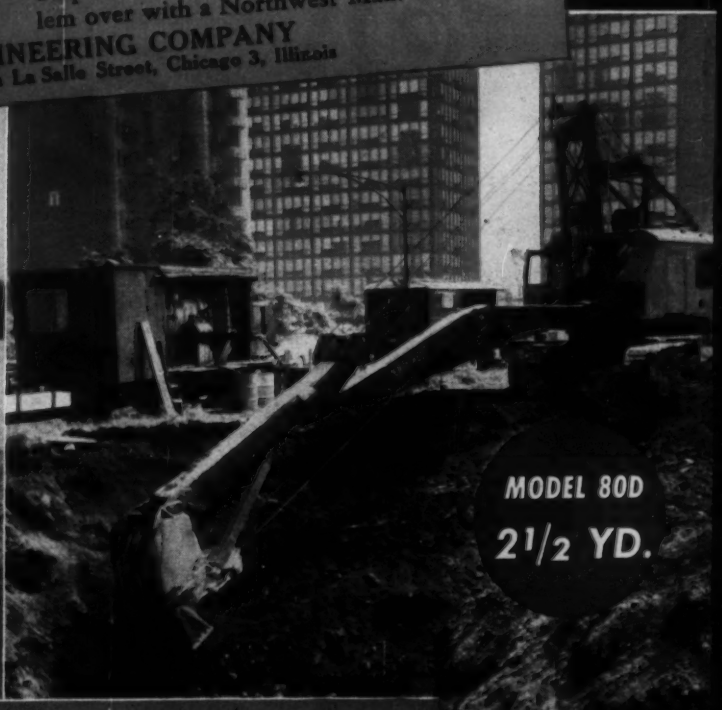

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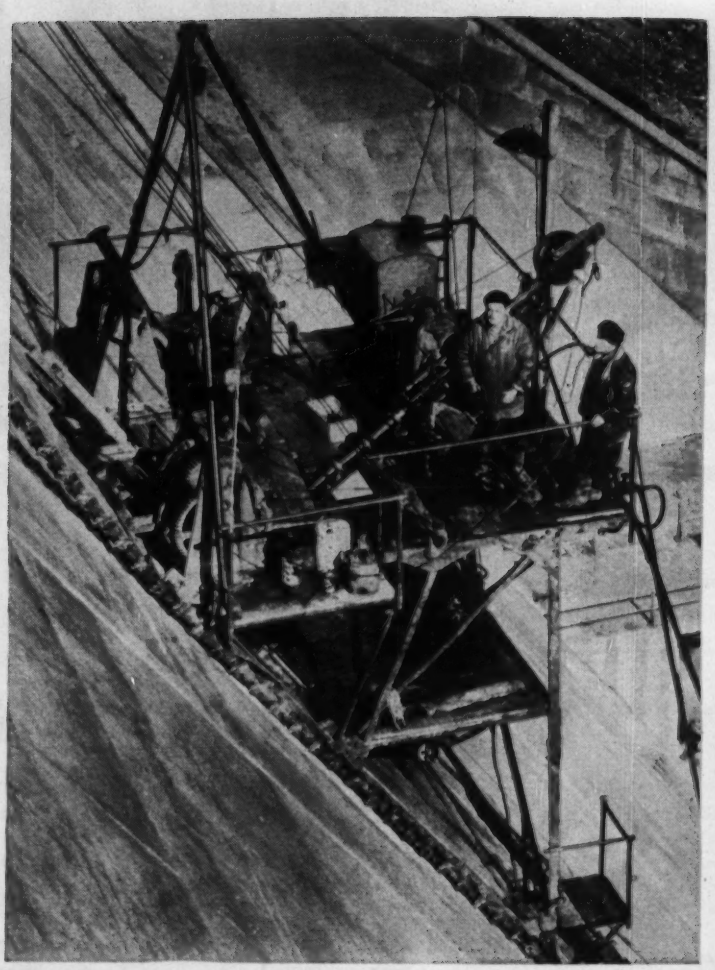
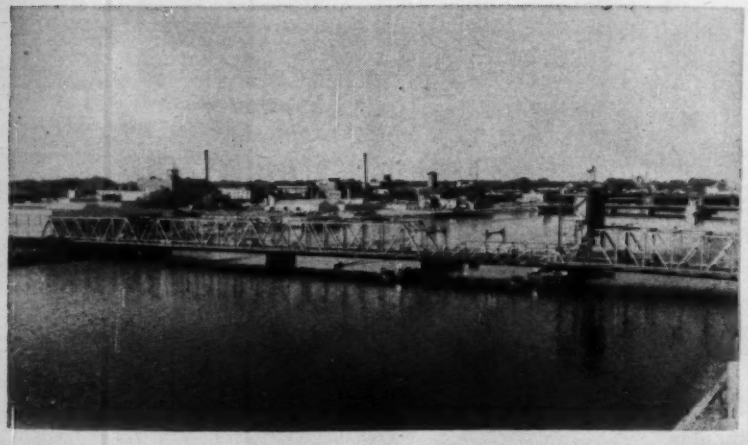
Longyear

Longyear drill crews save time and money



Accurate foundation information for building construction.

Core drilling and grouting operations for dams



Good cores tell the story for planning bridges.

From our bulletin no. 96

CONTRACT DRILLING SERVICE

Longyear crews, using modern equipment and advanced drilling techniques, have the experience and skill necessary to cope with all anticipated and unexpected drilling problems. They lower your costs by finishing the job in less time with less supervision. Longyear Contract Drilling Service can provide invaluable sub-surface information for building the following:

Dams — Highways — Buildings
Bridges and other heavy structures

By contracting with Longyear you get the benefit of:

1. The knowledge and skill accumulated through more than 60 years of experience.
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3. Consistently accurate samples.

RESULT — a lower cost to you for all types of core drill testing.

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TROUBLE-SHOOTING WILL BE NO TROUBLE IN THIS SEVEN FOOT *concrete utility tunnel*

Bakersfield College
Kern County High School and Jr. College District
Bakersfield, Calif.

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Wright, Metcalf & Parsons
Bakersfield, Calif.

Mechanical Engineer
Chester D. Walz
Los Angeles, Calif.

General Contractor
James I. Barnes
Redwood City, Calif.

Plumbing & Heating Contractor
Owen Clark Corporation
Bakersfield, Calif.

The quickest, cheapest way to locate and repair utility breaks is to walk right up to the trouble zone and go to work.

That's the way these lines, supplying heat, chilled water, light, and power to new Bakersfield College building, will be maintained.

American Vitrified Products supplied several thousand feet of specially manufactured concrete pipe for this project. Steel bands ⅛" thick, 3" wide were welded to the rim cage and wrapped around the inner core so they would be exposed on the inside surface when the pipe was completed.

Supporting brackets, holding the utility lines, were then welded to the bands on eight foot centers.

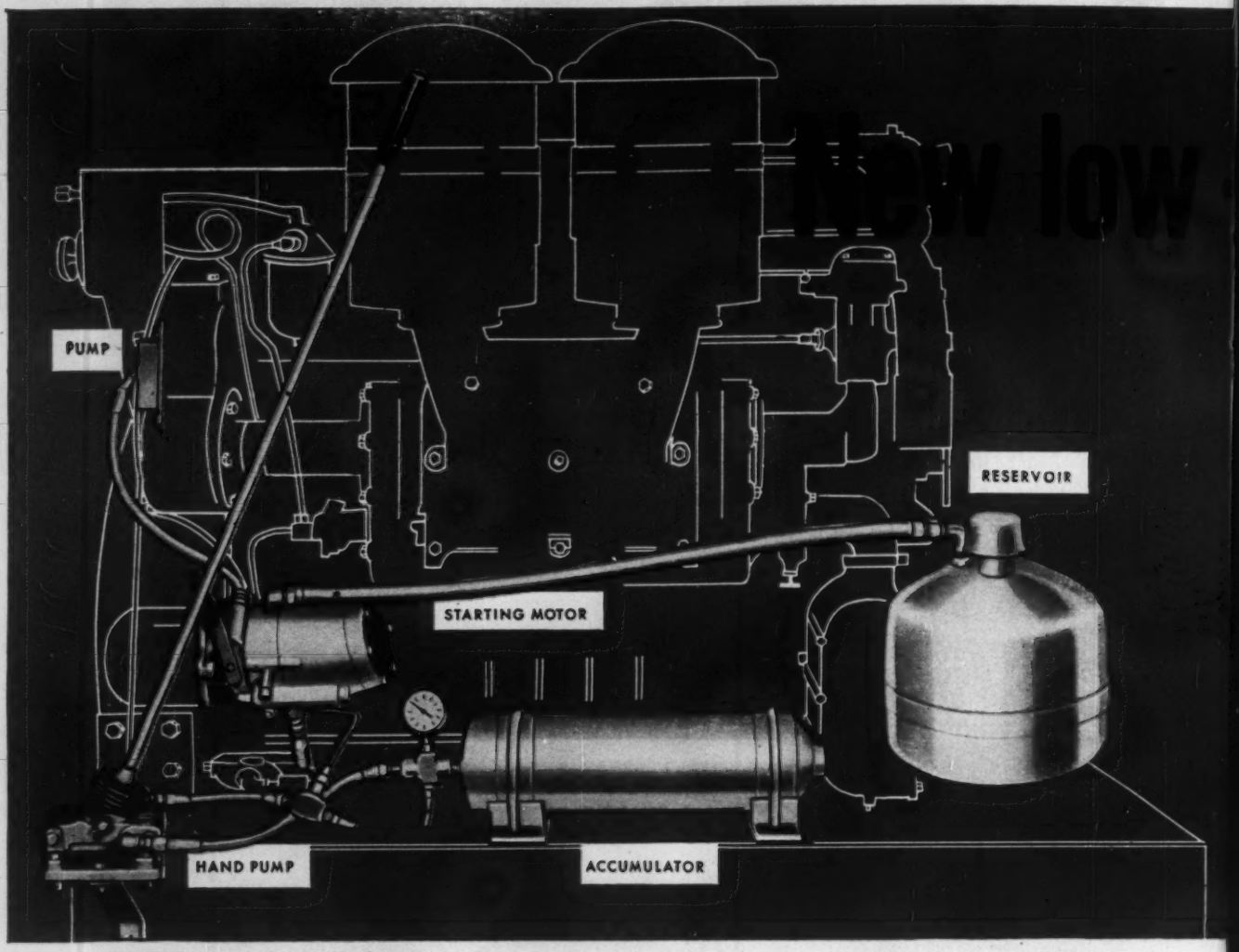
Complicated assignments such as this are everyday jobs for American. Years of experience and technical know-how guarantee customer satisfaction.

Concrete pipe is just one of the many products manufactured in our plants across the nation. We also produce the new Amvit Jointed Clay Pipe, flue liners—both glazed and unglazed, and clay liner plates.

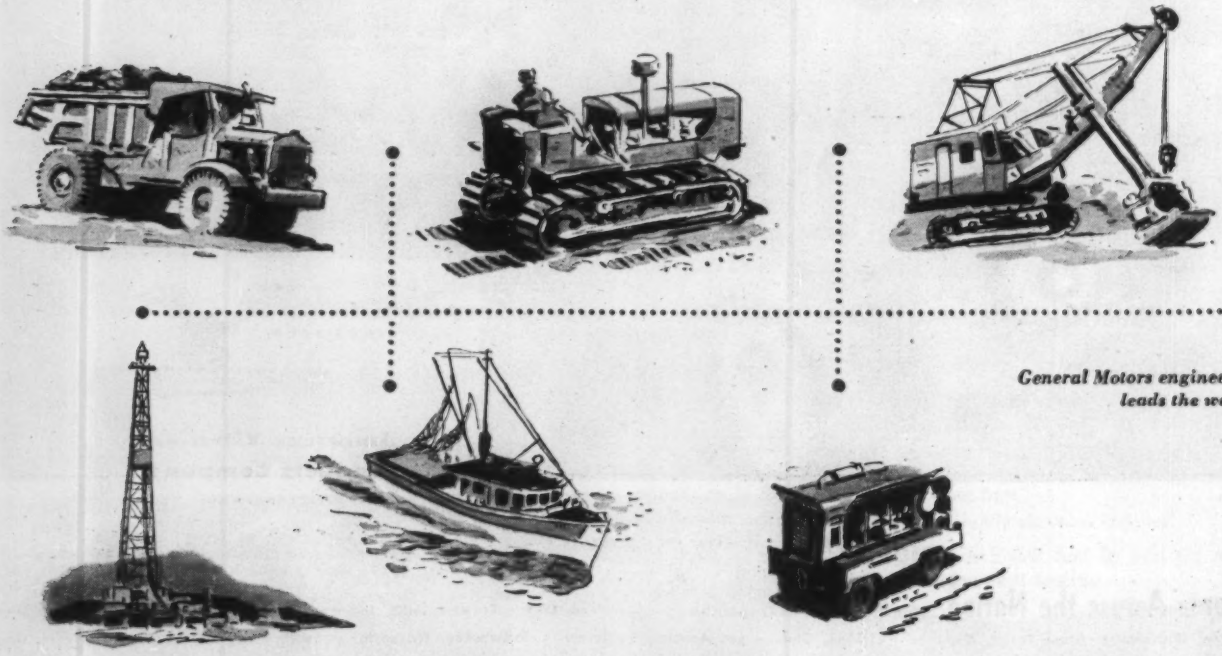
For more information, write or call American Vitrified Products Co., National City Bank Building, Cleveland, Ohio, or our office nearest you.

This pipe was specially designed to hold supporting brackets for the utility lines.

Plants Across the Nation...Brazil, Indiana • Chicago, Illinois • Cleveland, Ohio • Crawfordsville, Indiana • Detroit, Michigan • East Liverpool, Ohio Fenton, Michigan • Grand Ledge, Michigan • Lisbon, Ohio • Los Angeles, California • Milwaukee, Wisconsin • South Bend, Indiana • Uhrichsville, Ohio



NEW Aeroproducts Hydrostarter **brings quick, sure, safe starting to Diesel engines in all kinds of weather. It frees Diesel operators from battery replacements, costs less than any other nonelectric Diesel starting system.**



General Motors engineering leads the way

cost Diesel Hydrostarter

For positive all-weather starting

Now you can start your Diesel engine quickly in any kind of weather with the new Aeroproducts Hydrostarter – the hydraulic starting system that replaces regular starters.

It spins a Diesel twice as fast as battery-operated starters, has no parts or components that require regular replacement, costs less to operate than electric starting systems.

It fits any Diesel engine up to 300 horsepower, lasts the life of the engine on which it is installed.

And it sells for a far lower price than any other nonelectric Diesel starter available today.

Easy to install—simple to maintain

Your Diesel engine dealer or equipment distributor can quickly install the Aeroproducts Hydrostarter on your Diesel. The system is so simple that his mechanics—or yours—can do the job with no special training. And all it takes is a few hours' time for installation.

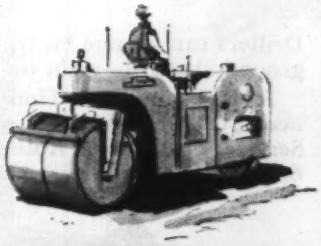
With a Hydrostarter on your Diesel your maintenance costs will drop, too. It's completely self-contained—routine maintenance checks are all the care it needs.

How the Hydrostarter works

Heart of the system is a hydraulic starting motor operated by high-pressure fluid. Pressure is built up and maintained by an engine-driven pump in a piston-type accumulator.

A simple control lever admits this high-pressure fluid to the starting motor, spinning the engine. This control lever also completely engages the starting motor's gears with the Diesel's flywheel before operation.

The hand-operated pump is provided to turn over the Diesel slowly for mechanical adjustments. It also is available to raise pressure if needed. The working fluid is stored and filtered in a reservoir.



See your dealer or write today

If you want quick, sure starts for your Diesels, ask your engine or equipment dealer about the new Aeroproducts Hydrostarter. He can give you full information—or quickly get it for you. If you prefer, fill in the coupon or write direct for more information.

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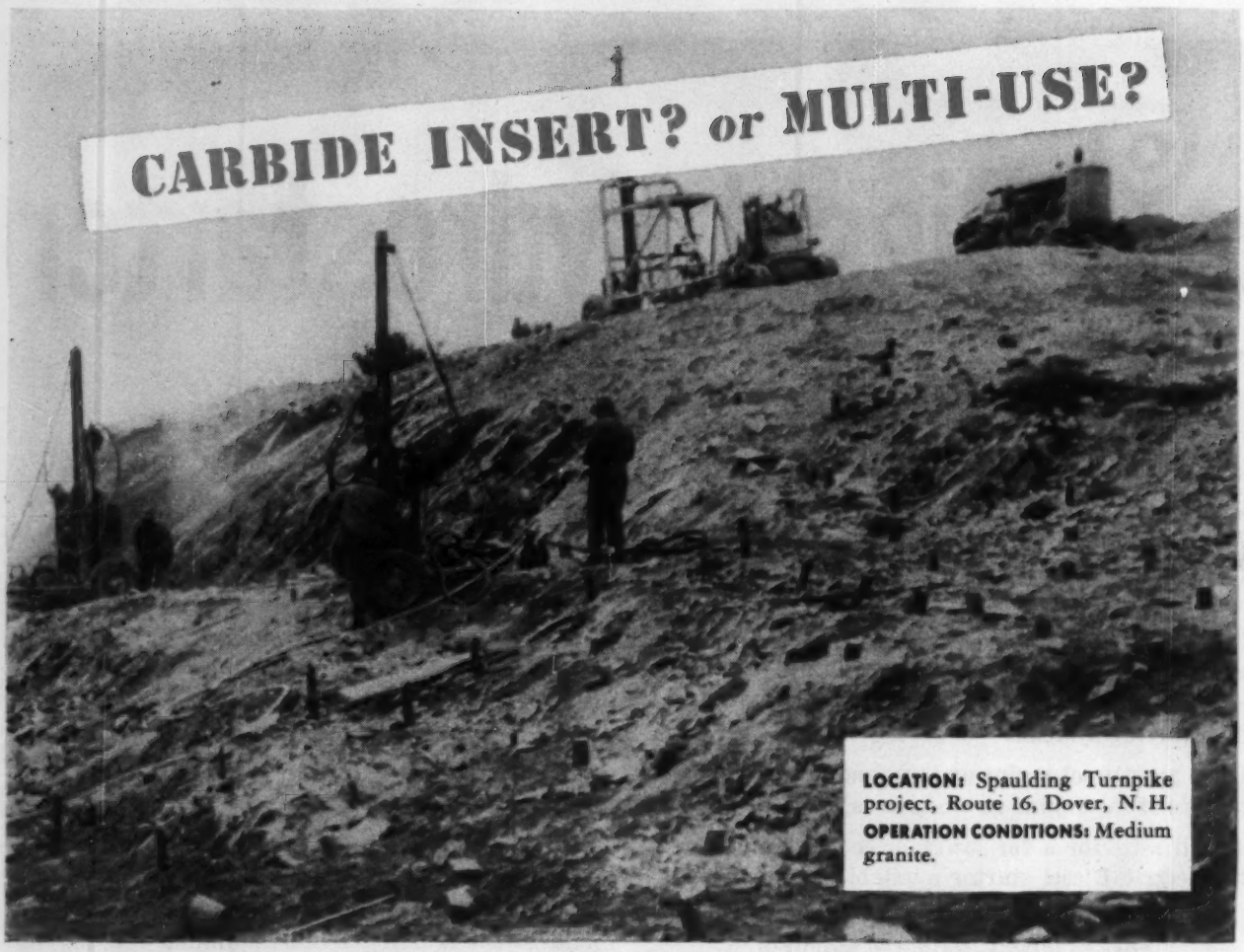
CARBIDE INSERT? or MULTI-USE?
LOCATION: Spaulding Turnpike project, Route 16, Dover, N. H.
OPERATION CONDITIONS: Medium granite.

W. H. HINMAN, INC., speeds drilling, reduces bit changes on Spaulding Turnpike with TIMKEN® DC and KC carbide insert bits

DRILLING through medium granite on New Hampshire's Spaulding Turnpike project, W. H. Hinman, Inc., increased drilling speed and reduced bit changes by using Timken® DC and KC carbide insert bits.

Timken carbide insert bits give you the highest speed through hard, abrasive ground. They're most economical for constant-gauge holes, small-diameter holes, and extremely deep holes.

But Timken carbide insert bits may not provide the best solution to *all* your drilling problems. For instance, in drilling ordinary ground, Timken multi-use bits are most economical. With correct and controlled reconditioning, they give the lowest cost per foot of hole when full increments of steel can be drilled.

Both Timken multi-use and carbide insert bits are made from electric furnace, Timken fine alloy steel. So you can count on them to last longer. And, because of the shoulder union developed by the Timken Company, threads are not subjected to drilling impact.

Many different Timken carbide insert and multi-use bits are interchangeable in the same thread series. Drillers can change bit types quickly and easily as the ground changes—right on the job!

To find out which Timken bit type is best for *your* needs, call or write the Timken Rock Bit Engineering Service, The Timken Roller Bearing Company, Canton 6, Ohio. Cable address: "TIMROSCO".

Timken threaded multi-use rock bit

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READER COMMENT

Temporary Housing Costs More

SIR: The low maintenance costs on public housing in Columbus, Ga. (ENR Sept. 29, 1955, p.214) teach a lesson worth putting on record—good housing is lower in overall cost to the taxpayer than poor (or "temporary") housing.

Because of the recent large appropriations that have been approved by Congress for the construction of housing for service personnel, it is my opinion that, in view of the terrible fiasco that occurred during the war years in the building of war housing, the importance of using the proper type of construction should be stressed to the responsible authorities.

A great many of the housing projects were built for "temporary use," but after approximately 15 years they are still being used. Because of the lack of foresight in design and construction, a continuous maintenance problem has resulted.

Referring to the article "War Time Housing for Peace Time Use" (ENR July 16, 1942) I wish to reiterate that all such housing should be of a permanent type of construction that will be suitable for public housing use after it is no longer needed for the purpose for which it was originally constructed. The project about which the above article was written is an outstanding example of the reasons why the proper type of construction is essentially important. According to recent statements of the city housing authority, this project has been greatly beneficial to the local community, and is looked upon with civic pride, beside the economic aspects as outlined in your September 29 issue.

W. J. HENRY
Washington, D. C.

Grind Cement on the Job

SIR: Some 30 years ago I worked for a cement company and that is one reason why I am interested in the present cement shortage. My idea is so simple that I am sure it has been thought of by some contractors as a way to reduce the cost of concrete, and it probably has been frowned on by cement companies. However, since the burning capacity at many mills is away beyond the grinding capacity (it used to be that way), why not let the contractor who has an order for 100,000 bbl. or more, do his own grinding?

It is certain that clinker can be rail shipped in gondolas or hauled in dump trucks cheaper than finished cement, and it shouldn't cost much more for power to grind it on the job than at the mill.

The contractors plant set-up has to include a cement silo anyway and a small ball mill shouldn't cost too much.

S. D. CLINTON
County Surveyor
Bannock County
Pocatello, Idaho

A Great Teacher

SIR: Reading the news of the death of Prof. Henry S. Jacoby in your issue of Sept. 22, I am prompted to add that those who had the fortune to attend Prof. Jacoby's classes at Cornell were introduced to mental discipline. This is the sort of thing which only the greatest teachers are able to transmit to their students. The average student's mind is apt to be all sheets-lose-in-the-wind, but after going through the enlightening and bitter experience of Prof. Jacoby's courses, all mental ropes were apt to be taut and trim—a lesson which often lasted through the professional lifetime of a student.

ELWYN E. SEELYE
Consulting Engineer
New York, N. Y.

Engineering News-Record welcomes expressions of opinion from its readers. Comment should be as brief as possible and pertinent to subjects of current construction importance.

Letters should be addressed: Editor, Engineering News-Record, 330 W. 42nd St., New York 36, N. Y.

CALENDAR

Institute of Traffic Engineers, annual meeting, William Penn Hotel, Pittsburgh, Pa., Oct. 23-27.

American Society of Civil Engineers, annual meeting, Statler Hotel, New York City, Oct. 24-28.

California Section, American Water Works Association, meeting, Memorial Auditorium, Sacramento, Calif., Oct. 25-28.

Nearly 200 "EUCS" already at work on the

Model 63TD "Euc" getting a heaped load of 20 cu. yds. at site of Long Sault Dam near Massena, N. Y.

Although work on the St. Lawrence Seaway and related New York Power Authority projects is just getting under way, close to 200 Euclids are already "digging in". They're helping build cofferdams, making diversion cuts, relocating highways and railroads, and preparing power house sites. Other "Eucs" are doing similar jobs on the Canadian side of the river.

One of the key projects in the whole Seaway program is construction of Long Sault Dam near Massena, N. Y., a joint venture sponsored by Walsh Construction Co. Others who have pooled their men and machines on this 7 million yard job are B. Perini & Sons Co., Morrison-Knudsen Co., Peter Kiewit Sons Co. and Utah Construction Co. . . . some of America's leading contractors. At present 50 "Eucs" are working on this one contract and others will be added as work progresses.

Eight of the Euclids are 22-ton Rear-Dumps with 300 h.p. engines and Torqmatic Drives. They were selected for this job because of their ability to haul big loads at fast travel speeds day in and day out . . . with less down time for servicing and repairs. That's the kind of performance that has made "Eucs" the preferred equipment for hauling heavy excavation on the toughest jobs everywhere . . . it's one of the important reasons why ***EUCLIDS are your best investment.***

Torqmatic Drive and 300 h.p. make this "Euc" a top performer. Torque Converter and semi-automatic transmission eliminate manual shifting—utilize full engine power at all times.

EUCLID DIVISION GENERAL MOTORS CORPORATION, Cleveland 17, Ohio

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FOR MOVING EARTH, ROCK, COAL AND ORE

EUCLID

GM GENERAL MOTORS

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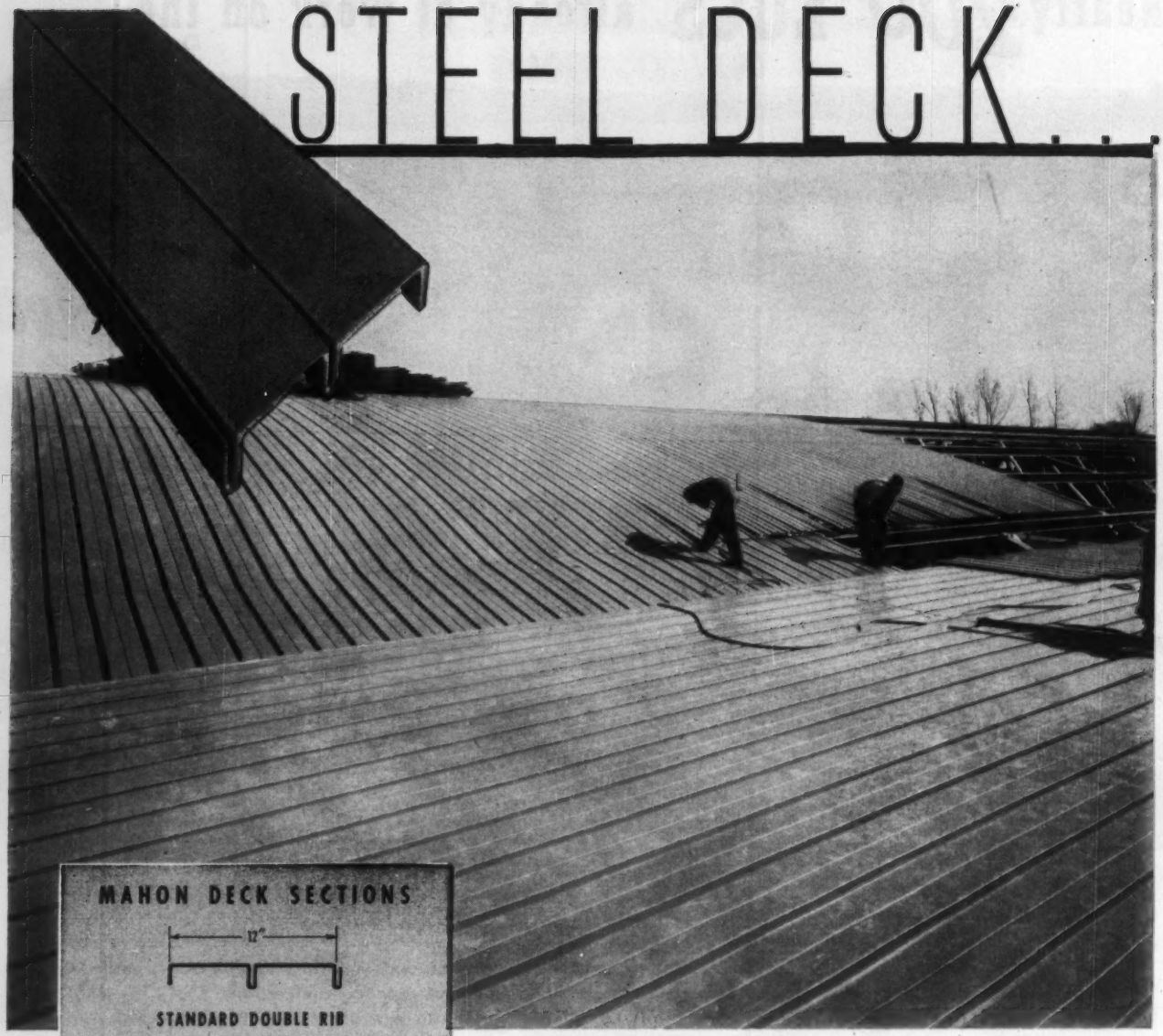
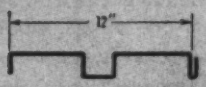
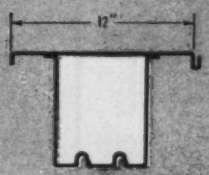


MAHON DECK SECTIONS

STANDARD DOUBLE RIB

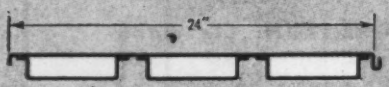


WIDE-FLANGE DOUBLE RIB



LONG SPAN M-DECK
SECTION M1-G

LONG SPAN M-DECK
SECTION M2-A



LONG SPAN M-DECK
SECTION M3-A

The illustration above shows Mahon Wide-flange Double Rib Steel Deck installed over bowstring trusses of a new roller skating rink. Year after year, Steel Deck roofs a greater percentage of new construction . . . and, it will continue to do so, because it weighs less and it costs less than any other type of permanent roof construction. Mahon Steel Deck is now available in the five Sections shown at left. The Long Span M-Deck Sections can be employed either with flat plate up or flat plate down . . . they span from beam to beam, eliminating roof purlins, and, when installed with flat plate up, they produce an attractive beamed ceiling effect. In either position, the bottom metal can be perforated and sound absorbing material inserted in the Cel-Beams to provide a highly effective acoustical ceiling. See Sweet's Files for information, or write for Mahon Catalogs D-56 and M-56.

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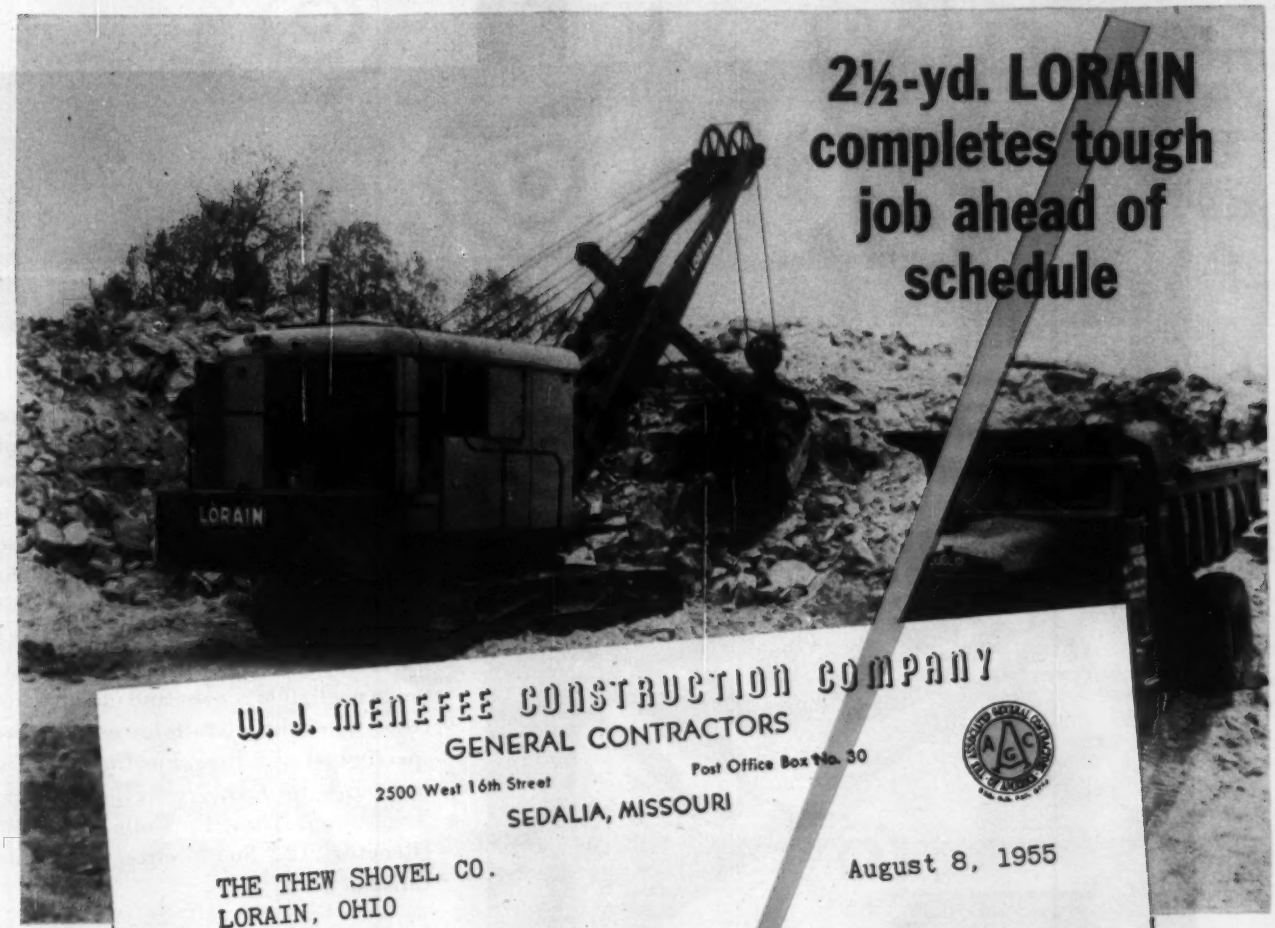
MAHON

2½-yd. LORAIN completes tough job ahead of schedule



W. J. MENEFEE CONSTRUCTION COMPANY
GENERAL CONTRACTORS
2500 West 16th Street — Post Office Box No. 30
SEDALIA, MISSOURI

THE THEW SHOVEL CO.
LORAIN, OHIO

August 8, 1955

Gentlemen:

Our new 2-1/2-yard Lorain, model 85 shovel, used on our Highway 66 project in Franklin County, Missouri, is our 9th Lorain machine.

It, like our other Lorain machines, has been satisfactory to us, and its high production, ease of operation and low maintenance enabled us to complete a tough job ahead of schedule.

We feel the Torque Converter is a definite asset to the machine's operation in hard rock production.

If we were in need of additional shovel equipment, we would buy another Lorain.

Yours very truly,

E. W. Menefee

E. W. Menefee, President

HERE ARE THE FACTS ABOUT THE MENEFEE JOB

240 yards of rock per hour — for a total of 170,000 yards of rock . . . that's the story of this 2½-yd. Lorain working on the 630,000-yd. contract on U. S. Highway 66, recently completed by W. J. Menefee Construction Co.

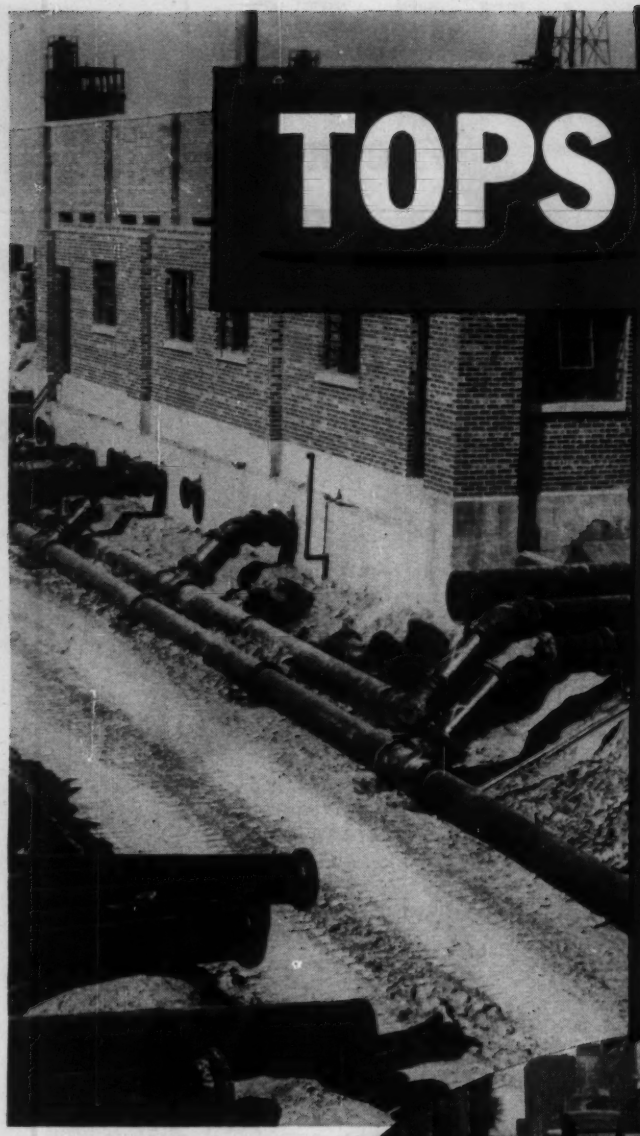
THE THEW SHOVEL CO., LORAIN, OHIO

New Catalog on the Lorain "85"

There's a new catalog available on this new, big Lorain that gives you the inside story of its design and performance features. Get your free copy from your Thew-Lorain Distributor or write direct to . . .

THEW LORAIN

TOPS for strength,



For jobs, where long life is a *must*, you can specify cast iron pipe with confidence. Confidence in its strength and toughness—its ability to withstand beam-stresses, traffic shock, compressive loads—its proved long life over a history running into centuries. The factors which endow cast iron pipe with its great durability are also the factors which mean negligible repairs and maintenance costs. When the job calls for *permanence*, specify cast iron pipe. For further information, write Cast Iron Pipe Research Association, Thos. F. Wolfe, Managing Director, 122 So. Michigan Avenue, Chicago 3.

CAST Q IRON

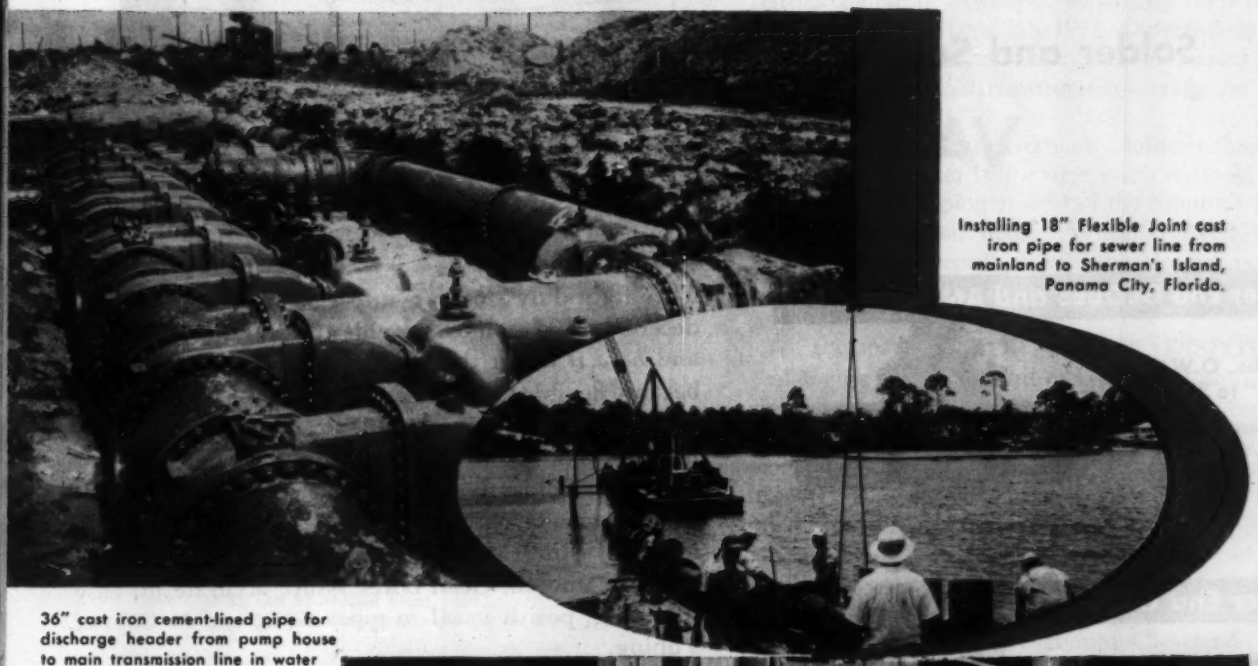
The Q-Check stencilled on pipe is the Registered Service Mark of the Cast Iron Pipe Research Association.

Installing cast iron pipe for discharge lines from water circulating pump house to refinery units of oil refinery in middle west.

Mechanical joint cast iron pipe being installed for gas main in Milwaukee, Wis.

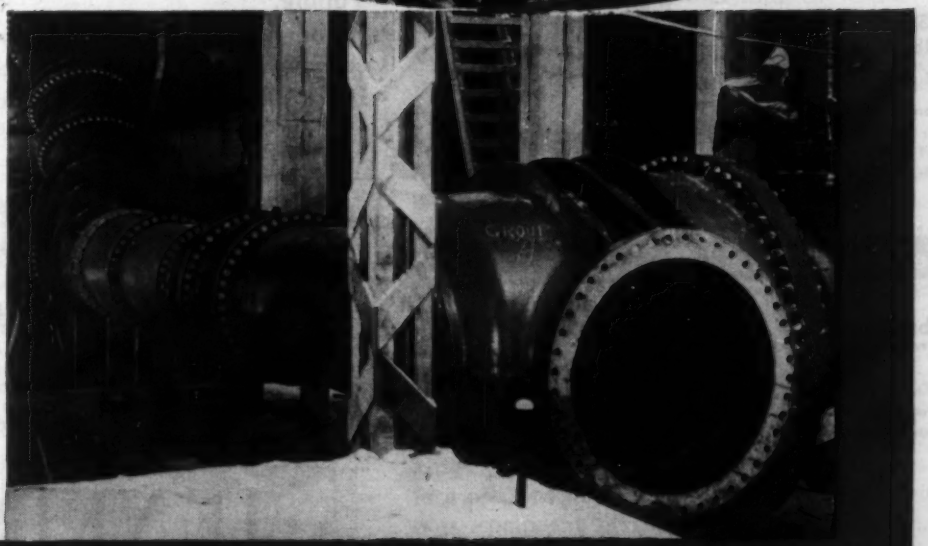
CAST IRON PIPE

toughness and long life



Installing 18" Flexible Joint cast iron pipe for sewer line from mainland to Sherman's Island, Panama City, Florida.

36" cast iron cement-lined pipe for discharge header from pump house to main transmission line in water supply system of Houston, Texas.



Installation of cast iron pipe and fittings in large filtration plant in Chicago, Ill.

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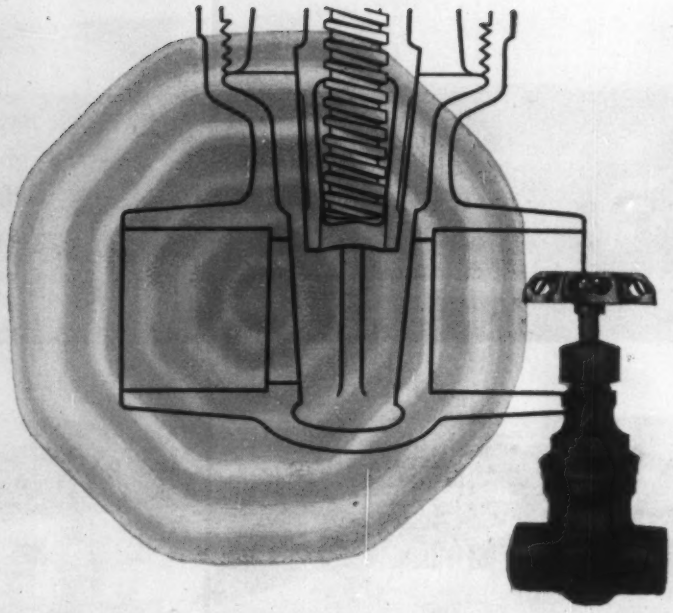
you need the extra strength of

JENKINS

Solder and Socket End

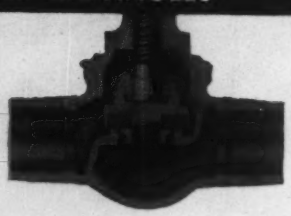
VALVES



Solder End GLOBES and ANGLES

300 lbs. O.W.G
¼" to 3"

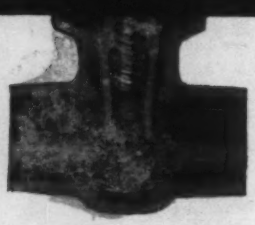
Fitted with Renewable Composition Disc.



Solder End GATES

225 lb. and
300 lb. O.W.G.
⅜" to 3"

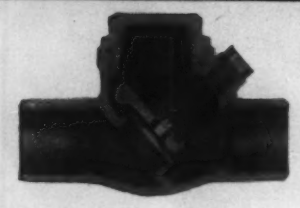
With solid or split wedges, and stationary or traveling spindles.

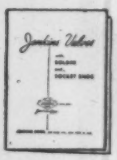


Solder End CHECKS

300 lbs. O.W.G.
¼" to 3"

Regrinding. May be easily reground without removal from line.





NEW BULLETIN Lists all Jenkins Solder End and Socket End Valves and gives complete instructions for soldering and brazing. Ask for Solder-Socket End booklet.

The "light-duty" look of copper tubing installations is deceiving. Valves must provide an accurate fit to tubing and *hold it* under the intense heat of soldering. And, because flexible tubing does not afford the rigid support of standard pipe, valves must withstand unusual strains in operation.

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For faster, trouble-free installation, and lasting economy, specify Jenkins Solder End Valves. Jenkins Bros., 100 Park Ave., New York 17.

JENKINS Socket End Valves

for Class B or IPS Tubing

Jenkins bronze valves with socket ends for silver-brazing are made in Globe, Gate, and Swing Check patterns to control compressed air, hot oil, and similar fluids in tubing hookups where specifications call for permanent, leakproof joints. Complete information in the Bulletin offered below.

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ENGINEERING NEWS-RECORD

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THE CONSTRUCTION WEEK

AN EVEN BETTER 1956—ENR's preliminary forecast for 1956 is that heavy construction contract volume will top this year's record by 5% (page 21). And this year's record volume, on the basis of the first nine months' returns, is estimated at $18.2 billion—a walloping 25% over '53.

Rarely have the signs on the road to the next year been more plainly marked. Most important is the terrific volume of new work which has been entering the planning stage since late 1953. Outstanding among these boom-rollers are state and municipal public works and industrial construction—certain to be big factors in 1956.

Yet big as this year's contract volume is shaping up and though brighter still is next year's outlook, we are still just about keeping in sight of the country's demonstrated construction needs. While contract volume keeps breaking records, ENR's backlog of proposed work grows at an ever faster rate.

NEW FRONTIER FOR WASTE DISPOSAL—A challenging proposal heard at last week's annual convention of the Federation of Sewage & Industrial Wastes Associations (page 23) was that a 100-mile pipeline be built to carry sewage and waste material from the Greater Cleveland area to abandoned strip mine pits in Southeast Ohio.

The idea of John J. Wirts, superintendent of Cleveland's Easterly Sewage Treatment Plant, is that there should be a twin pipeline—one carrying sludge out, and the other bringing coal into Cleveland. Wirts called attention to the fact that for the past 17 years Cleveland actually has had pipeline transport of sewage sludge—for a distance of 13 miles between two of its installations.

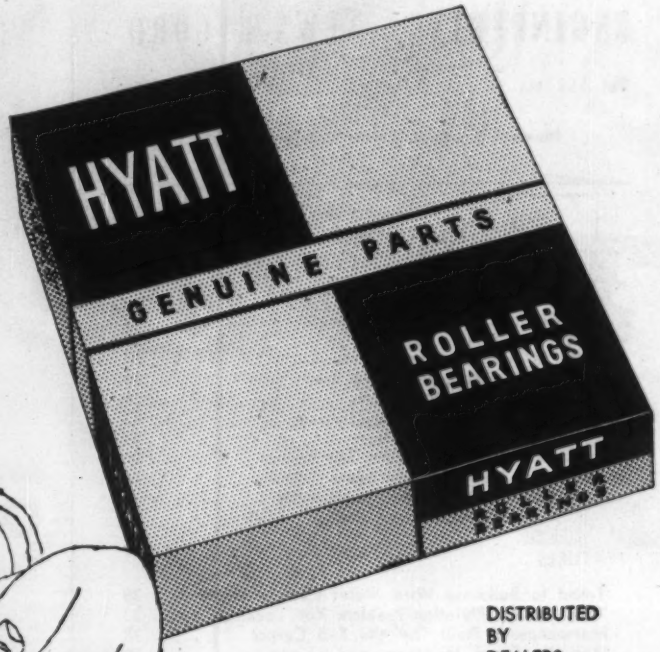
HELP FROM PRIVATE ENTERPRISE—The City of San Francisco and the Bureau of Reclamation, each in its own way, were engaged last week in furthering the trend toward encouraging private enterprise and non-government groups to take a hand in expediting public improvements.

San Francisco's Board of Supervisors, acting under 1949 state enabling legislation, declared itself to be a parking authority (page 25). Its first act was to withdraw plans for a municipal parking garage in favor of a private development. Consideration also was given to a proposal to lease condemned land to a corporation, composed of downtown merchants, to build and operate a facility on a non-profit basis.

The Reclamation Bureau was in search of proposals from California private and municipal utilities for developing the power features of the $225 million Trinity River project authorized by Congress last year as part of California's Central Valley scheme. (Page 24).

NO WONDER HYATTS ARE SO GOOD . . .

there's no substitute for . . .



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says HY WHEELER, the sage of the socket wrench

And that's just *before* assembly, brother! The average roller gets off "easy" with only 17 inspections—the average race has to pass 41. Then at *final* inspection; every finished Hyatt gets a goin'-over that makes the third degree look like a Sunday school picnic!

That final inspection and packaging at Hyatt is as careful as for a thousand-dollar watch. Why, the girls even have their hands coated with special stuff to keep any sweat from touchin' those precious Hyatts! That's why I keep remindin' you: There's other bearings that *look* as good, but you *hold out for Hyatts in the blue and yellow box.*

HYATT ROLLER BEARINGS

STRAIGHT BARREL TAPER

HYATT BEARINGS DIVISION • GENERAL MOTORS CORPORATION • HARRISON, NEW JERSEY

WASHINGTON OBSERVER

Construction credit policies of the government will be eased if housing fails to level or turn up this fall. The Administration feels that it would be dangerous to let the annual total for starts fall below 1,200,000 units. September starts, down 10,000 from August, reflect an annual total of only 1,230,000, almost too close to the break point for comfort.

But don't look for any overnight loosening of credit. The Treasury Department and the Federal Reserve Board are agreed they should sit and wait for awhile. But Eisenhower's illness has taken some of the bloom off business confidence, and so the government is alerted to easing if a downturn becomes a real threat.

•

Certainly, any further tightening of mortgage credit is out. Home builders already are complaining to the housing and home finance agency and the Home Loan Bank Board. And now the Treasury and the Federal Reserve say they are aware of the delicacy of the situation. October housing starts will be out in mid-November; they will be the key to further government actions.

A good bet for first easing will be by the Home Loan Bank Board. It was last to come into line with tougher policies with its decision not to advance any more to savings and loan associations. Relaxing this would quickly make more money available. Meantime, the savings and loan firms are searching for additional sources of money.

•

Politics are as key to the situation as is economics. Maintaining prosperity was to be Eisenhower's platform for re-election. Now, with the prospect he won't be available, the need for such a campaign is increased. Tax reduction, more money for highways and schools, and so forth will be promised in order to get a wide appeal to the voters.

Highways: The White House is marking time at the moment, waiting for resurvey of the problem by the Governors' Committee, and by the Bureau of Public Roads. Gen. Lucius Clay will be back as an adviser. The Administration will have to back down from its bonding plan for financing. The Democrats in Congress just won't buy it. Sen. Albert Gore is pushing for his own bill to enlarge the federal-aid program. The Administration may try for part bond financing—part user tax financing.

Schools: The White House Conference on Schools in November will give the tip-off. Eisenhower is strongly committed to limiting federal aid only to needy cases. But political pressures will be applied strongly to get a grant-in-aid program.

Public Works: Unless a recession really sets in, the Administration will continue its go slow approach. Upper Colorado water storage and Frying Pan Arkansas projects are expected to be the only big recommendations.

•

Public Housing Administration has set up priorities for allocating the 45,000 units it expects to authorize this year.

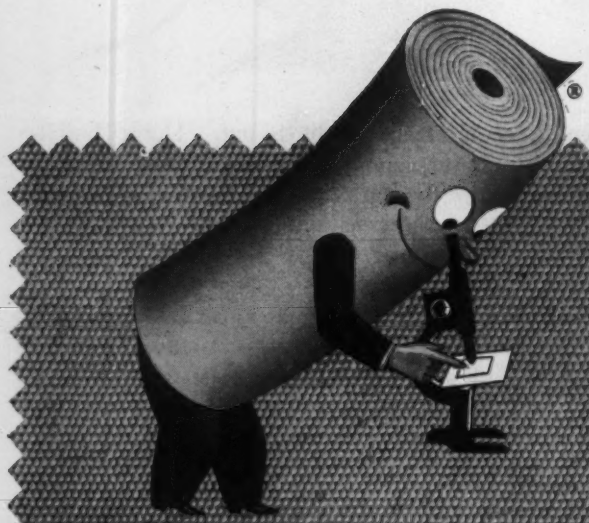
First priority goes to families displaced by housing projects and to public housing designed to correct racial inequities in existing housing programs on the books.

Second in line are cities who had to halt already approved projects because of limitations of one kind or another that held up actual start of construction.

Third on the priority list are cities that need the housing but so far haven't ever been able to get in on the government-subsidized program.

Fabric UNIFORMITY

Makes The Big Difference In TARPAULINS



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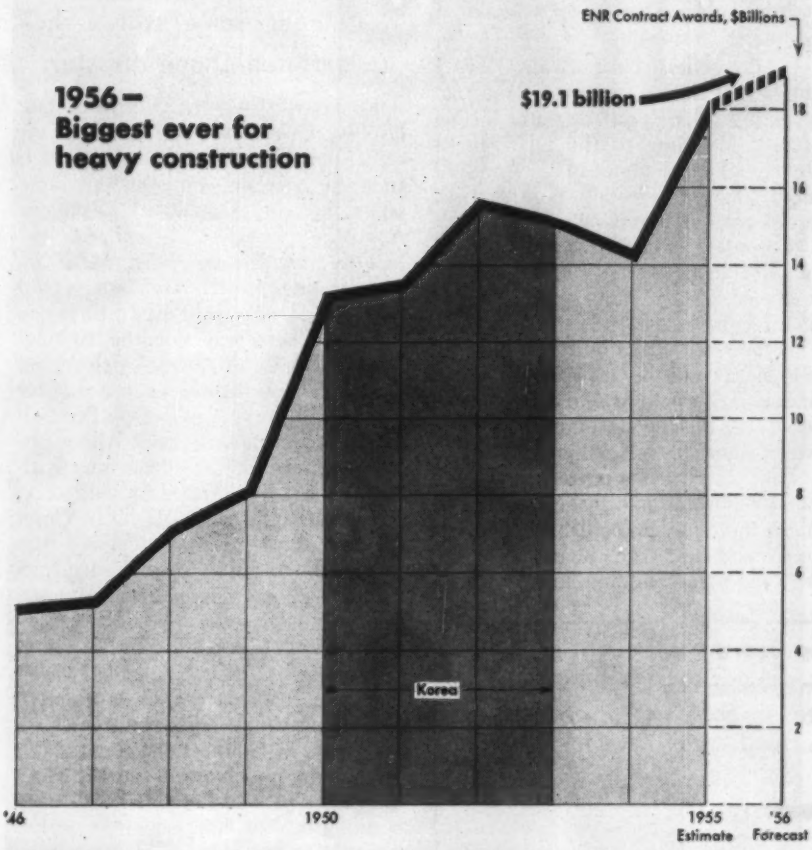


'56 To Set A Record

It looks like 1956 will be the biggest year in history for the construction industry.

ENGINEERING NEWS-RECORD's preliminary forecast is that contract awards for heavy construction will top this year's record level by 5%, climbing to a new peak of $19.1 billion.

The total for this year is estimated at $18.2 billion, a fantastic 25% jump over last year's volume. This is based on activity in the first nine months, which totals $14.1 billion, just under the total for all of 1954.

While the rate of increase for next year will not be as spectacular, the end result will be a healthy boom. A 5% rise in construction activity probably would result in nothing more serious than the spot shortages and slow deliveries that marked the steel and cement situations this year.

State and local construction should set new records next year and continued gains can be expected in federal work. To add another cheerful note to an already rosy picture, private awards will be on a par with 1955's record level of $11.2 billion.

Contract awards should be up next year in all major types of public works except two—sewerage and public housing. These two categories will be about even with '55.

Here are some of the new records you can look for: highways, up 17%; earthwork and waterways, up 15%; waterworks, up 11%; and unclassified (with a big boost from military construction) up 21% (see table).

Awards for bridge construction will go up 20% to make '56 the second biggest year on record for this type of construction.

Public buildings other than housing are expected to show an approximate 7% increase.

The $1,850 million total predicted would be the highest since 1952 when $2.3 billion in Atomic Energy Commission awards catapulted this category into a new record.

In private construction, gains of 15% for industrial building and 5% for commercial building will offset declines of 7% in mass housing and 9% in unclassified, to keep the '56 total for the private work category within 0.1% of 1955.

• **More work coming**—There is a solid base for the optimistic 1956 predictions. Strongest support for this outlook comes from a staggering volume of new work which has been proposed this year.

During the first nine months of 1955, ENR reported $18 billion worth of proposed heavy construction projects. That's 54% more than the value of projects proposed in the comparable '54 period.

This record flow of proposed work in the planning stage has pushed the ENR backlog to a high of $84.4 billion as of Sept. 30. In the last 12 months, $11.5 billion worth of projects have poured in. The 15% rise is the biggest increase in the backlog for any 12 months on record.

Nearly all major types of heavy construction are pouring into the design offices in increased volume. Biggest gains over '54 (on a nine-month basis):

Heavy Construction Up 5% to Record $19 Billion

Type of Work	Annual Review Forecast 1955	9-Month Projection Est. Total 1955	Preliminary Forecast 1956	% Chg. '55-'56
	(Millions)			
All construction	$15,640	$18,152	$19,055	+ 5
Private	8,660	11,196	11,185	−0.1
Public	6 980	6,956	7,870	+13
State & municipal	5,580	5,315	5,390	+13
Federal	1,400	1,641	1,880	+15
Public				
Waterworks	250	270	300	+11
Sewerage	410	405	405	0
Bridges	525	489	585	+20
Highways	2,355	2,180	2,550	+17
Earthwork, irr., drain.	475	522	600	+15
Building, excl. housing	1,860	1,732	1,850	+ 7
Housing	230	280	280	0
Unclassified	875	1,078	1,300	+21
Private				
Housing	4,400	6,013	5,600	− 7
Commercial	1,520	1,603	1,685	+ 5
Industrial	1,990	2,705	3,100	+15
Unclassified	750	875	800	− 9

earthwork and waterways, up 32% to $322 million; bridges, up 174% to $624 million; highways, up 85% to $3,542 million; waterworks, up 126% to $441 million; public unclassified, up 59% to $933 million; private industrial building, up 46% to $2,849 million; and public buildings, up 31% to $2,183 million.

Smaller increases for work entering the backlog include commercial building, up 10% to $1,592 million; and sewerage, up 2% to $292 million.

Proposed private mass housing soared 72% in 1955 over '54, with $2,423 million worth of jobs. This should support a high level of mass housing activity in '56.

The only major construction category that shows a lower volume of proposed work this year than in '54 is private unclassified construction, prin-

cipally pipelines and transmission lines.

• **Record contract rate**—This buildup of proposed work has come at a time when jobs have been moving out of the backlog and into the contract stage in a record volume.

During the first nine months of '55, projects costing $6.7 billion moved out of the backlog and into contracts. But even this record surge of contract awards hasn't dented the backlog. In fact, the backlog is rising at its fastest rate. While $6.7 billion worth of work in the backlog moved out to the contract stage, some $18 billion worth of work entered the backlog. This is and key point. Pressure is mounting for higher volume of construction.

Construction needs money, of course. But even that won't slow down the roaring boom in '56. While money probably will be harder to get and interest costs may be higher, few, if any, worthwhile projects will be held back because of financing.

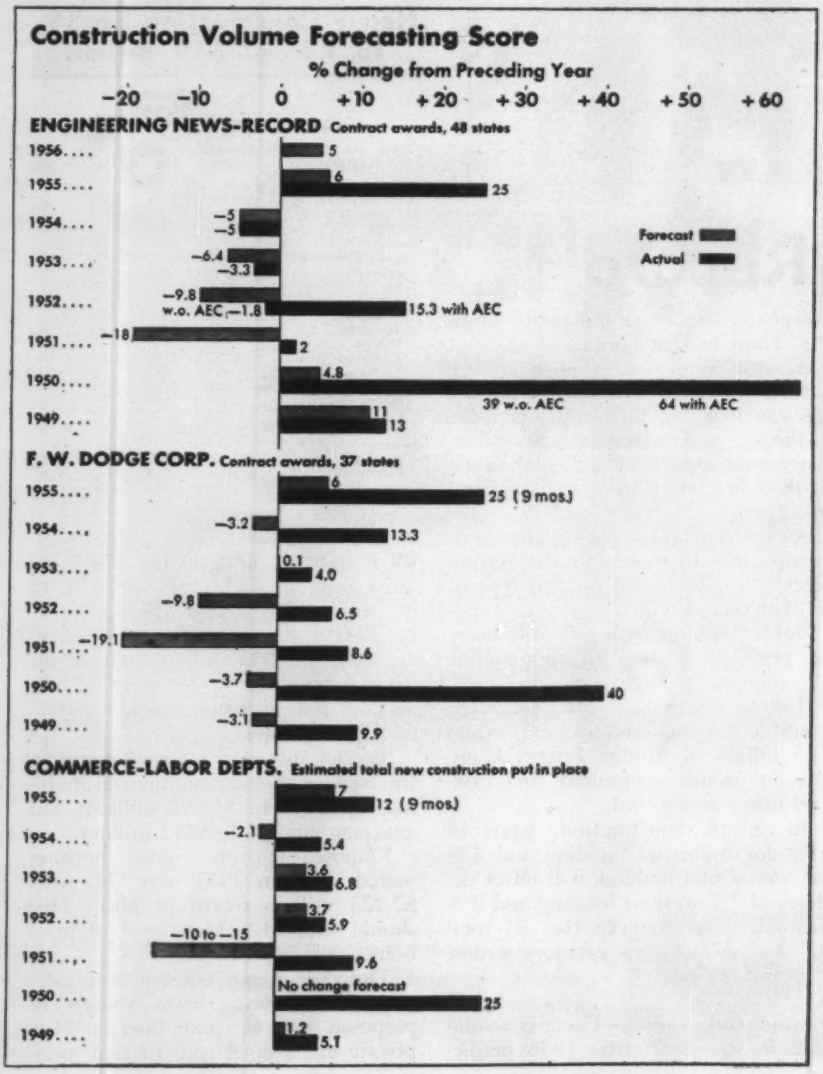
The federal government already has won a 50% increase in construction appropriations for fiscal '56. And, if bond approvals are a good indicator, 1956 should see a heavier volume of municipal borrowing.

At the general elections on Nov. 8 voters will decide on bond issues aggregating $2,407 million, an all-time record, according to the Daily Bond Buyer. That's about $819 million more than the total submitted to voters at the last general election.

Corporate financing for construction also looks strong. For the first 41 weeks of '55, it's running 20% ahead of the comparable 1954 period.

Biggest problem from the financing side in '56 probably will be a mortgage financing for homebuilding. But a moderate decline in housing volume would tend to solve this problem.

And, increased repayments on the rapidly-growing mortgage debt will mean more money available to lenders to reinvest next year. That should also help the home building field.


Construction Volume Forecasting Score
% Change from Preceding Year
−20 −10 0 +10 +20 +30 +40 +50 +60
ENGINEERING NEWS-RECORD Contract awards, 48 states
1956.... 5
1955.... 6 25
1954.... −5 −5
1953.... −6.4 −3.3
1952.... −9.8 w.o. AEC −1.8 15.3 with AEC
1951.... −18 2
1950.... 4.8 39 w.o. AEC 64 with AEC
1949.... 11 13
Forecast
Actual
F. W. DODGE CORP. Contract awards, 37 states
1955.... 6 25 (9 mos.)
1954.... −3.2 13.3
1953.... 0.1 4.0
1952.... −9.8 6.5
1951.... −19.1 8.6
1950.... −3.7 40
1949.... −3.1 9.9
COMMERCE-LABOR DEPTS. Estimated total new construction put in place
1955.... 7 12 (9 mos.)
1954.... −2.1 5.4
1953.... 3.6 6.8
1952.... 3.7 5.9
1951.... −10 to −15 9.6
1950.... No change forecast 25
1949.... 1.2 5.1

Northeast Floods

Tropical rain, high tides plague some states that suffered Diane disaster

Floods revisited the Northeast late last week as an "extra-tropical cyclone" brought winds, rain and high tides to bear on some of the same cities hit by Hurricane Diane in August.

This time it was a longer, less violent soaking, with rainfall ranging up to nearly 12 in. spread over a three-day period. There was not the ripping, tearing damage of August's deluge, yet Connecticut was once again a disaster area. New York, New Jersey, Pennsylvania, Massachusetts and Rhode Island all suffered from the storm, with still more rain predicted for this week.

In Hartford, State Highway Commissioner N. E. Argraves reported that half of the $4 million worth of repairs to roads and bridges since August's flood would have to be done again.

In Boston, Brig. Gen. Robert J. Flemming, Jr., New England Division Engineer reported that $3 million to $4 million would be committed to repair work in Connecticut alone.

Danbury and Norwalk on the Housatonic River and Fairfield County communities of Connecticut took the brunt of it this time. The Naugatuck River Valley, hardest hit in August, suffered some damage, but it was light by comparison.

High tides teamed with swollen estuaries to do severe damage along the coast from Milford to Greenwich.

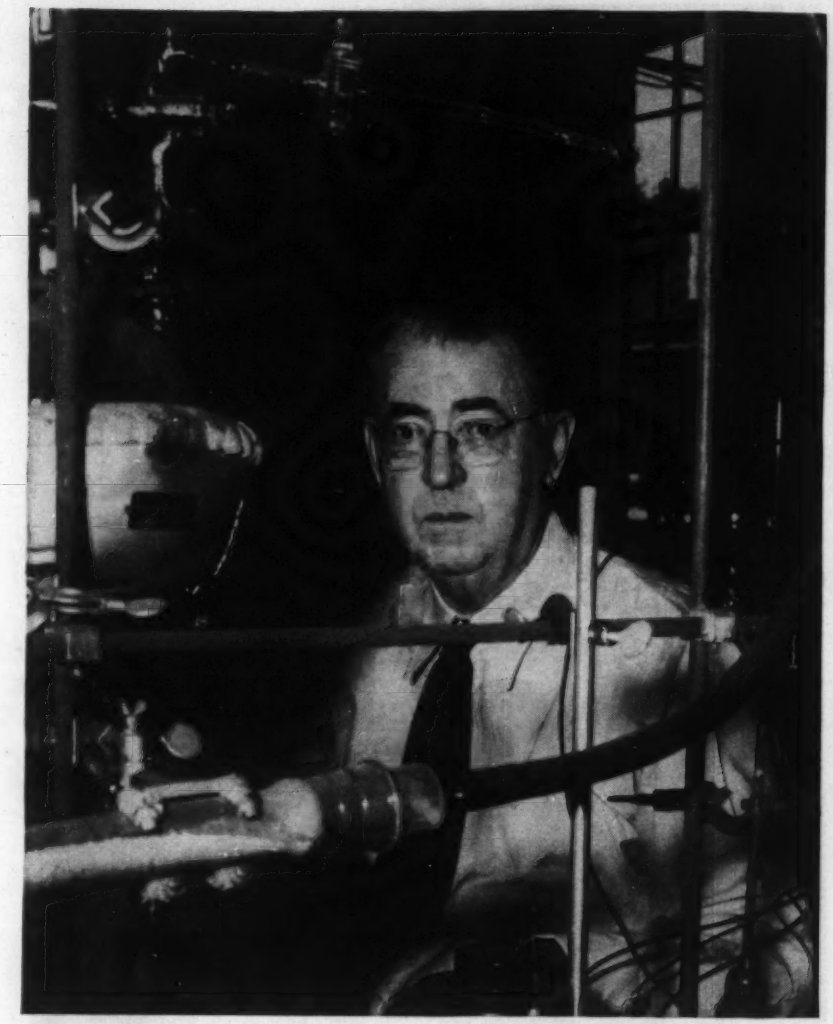
In general, the riverbeds washed out in August got by this time in better shape. But, temporary structures, with their cumbersome crib piers blocking streams, went out under force of high water. At Ansonia, Conn., one of the many Bailey bridges still in use washed away.

In Waterbury, a New York, New Haven and Hartford Railroad bridge, rebuilt since August, went down once more.

The railroad was hard hit again with service completely cut off. The New York Central in New York and DL&W in New Jersey were likewise crippled.

In Putnam, Conn., hard hit in August, severe damage was averted by boring through a small upstream dam in Holland, Mass., to relieve built-up pressures threatening to burst into the Quinnebaug River.

In total, the storm caused "only moderate structural damage as compared with the one in August," according to General Flemming. A total estimate is yet to come.



IN THE LAB, Walter A. Patrick, professor of chemistry at Johns Hopkins University, thinks he's found how acid mine waste can be inhibited. And, in legislation . . .

FSIWA Hears States to Fight For Local Pollution Control

The fate of legislation needed to extend the nation's Water Pollution Control Act, before it expires next June 30, may have been settled last week in Atlantic City, N. J. A record number of delegates attending the annual convention of the Federation of Sewage and Industrial Wastes Associations heard indications of how the pending bill might gain needed support in the next session of Congress.

A four-day technical program, together with the accompanying water and sewage works equipment show, kept delegates busy as the Federation's oldest association—the New Jersey group—played host. But it was a closed session of some 30 state and interstate water pollution control officials that made the convention's prime news.

Following a scheduled talk by G. E. McCallum, newly appointed head of the U. S. Public Health Service water pollution control program, a report on caucus of state and interstate administrators was made by Morris Cohn, representing the New York State Joint Legislative Committee on Interstate Cooperation.

Briefly, the state stream pollution administrators had agreed that the federal act should be passed, in some modified form of the Senate bill (S890), which bogged down in hearings during the last congressional session.

(It was not reported here that there remain a number of states that are against any federal activity in water pollution controls. These states, representing a minority, have assumed the attitude that some federal control is inevitable, and they are going along with the majority intent on seeing that an acceptable law finally passes.)

The state administrators hope to see the present bill sent back from the Senate Rules Committee to the Public Works Committee, where it will be possible to make desired changes. Basic point of contention has been the amount of initiative to be given the federal government in "last resort" cases of interstate pollution abatement enforcement. There appears now to be general accord on what changes need to be made in the bill as originally proposed by USPHS, changes that will keep control within the jurisdiction of the respective states.

• **Mine-acid inhibitor**—In what was perhaps the most significant technical paper of the convention, Prof. Walter A. Patrick (see photo) described for the first time his long-withheld theories on abating water pollution by acid seepage from coal mines and stripping operations. A mine-acid inhibitor developed by Professor Patrick and Floyd W. McCollum at Johns Hopkins has for many months been entangled in patent problems described in ENR Oct. 6. p. 28.

A fact long established in Patrick's studies of corrosion—that corrosion of iron in these mines is the result of an electrolytic process—is the basis for development of the technique. Disintegration of relatively stable pyrites occurs with exposure to air during mining operations, which results in the simultaneous supply of electrons and hydrogen (supplied by the iron itself), during which hydrogen peroxide is formed. This triggers a reaction whereby the iron pyrite goes rapidly into solution while a union of the hydrogen peroxide and sulfur results in formation of various sulfur acids and finally in production of the tremendous quantities of dilute sulfuric acid that seep into streams.

The simple solution, according to Patrick, is to stop the reaction at either pole of the electrolytic process. This can be done by addition of material of more negative electric potential than oxygen at the peroxide end, or a similar addition at the ferrous end of the process. He states that addition of a few parts per million of chromates at the former—or addition of a few ppm of phosphates at the latter—effectively blocks the process in the laboratory for as long as six months. If field tests substantiate the lab findings, a virtual check may be established in drift as well as strip mining and might remove this costly problem in water supply and agricultural fields.

• **Revenues vs G. O. bonds**—Two sides

of the regional approach to stream pollution control were represented by Robert S. Shaw, Chief of the N. J. Bureau of Public Health Engineering, who discussed the state's assault on the problem through the medium of authorities, and Roy H. Ritter, partner, of Whitman, Requardt & Assoc., engineers of Baltimore, Md., whose paper on the design and operation of city-county developed coordinated sewerage system of the City of Wilmington and New Castle County, Del.., professed advantages of general obligation bonds and sewer service charges.

According to Shaw, in the current 5-yr program of spending (1953-1958), more than $250 million is being spent in N. J. alone, and more than 50% is in authority controlled sewerage.

On the other hand, Ritter claimed that one advantage of the Wilmington-New Castle development was its financing of a system to serve more than 250,000 persons through general obligation bonds—not through use of revenue bonds or overriding governmental agencies.

Wide use of engineering staff of both governmental agencies and the method of financing results in substantial savings to contributors paying for the project, he said.

Partner Wanted

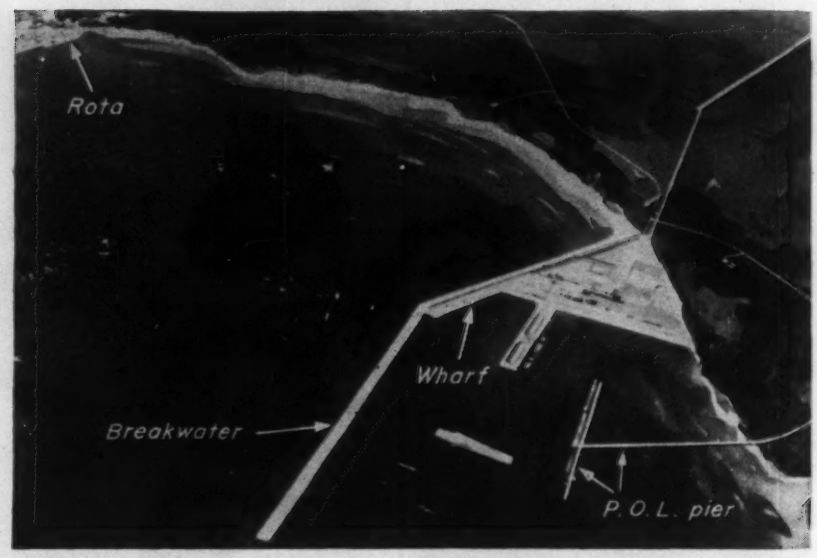
Reclamation Bureau Seeks Trinity River Proposals

The Reclamation Bureau is searching among California's public and private agencies for a partner to help develop power phases of the $225-million Trinity River project.

The bureau has paved the way for teamwork talks by sending a letter to irrigation districts, water users associations, municipal utility districts, and other public agencies and private companies. The letter states that the federal government will welcome power proposals by any non-federal agency.

The Trinity River project will develop 230,000 kw and feature a storage reservoir with 2,500,000 acre-ft capacity. It was authorized by Congress last August as part of California's Central Valley Project. At that time Congress left the door open for a power partnership plan by stipulating that the Secretary of Interior negotiate with any non-federal agency proposing to purchase falling water.

One proposal already is on hand. Last year Pacific Gas & Electric Co. offered to construct power-generating features of the project as well as to pay for the use of falling water that is developed. The utility said that this arrangement would save the federal government $40-million.



Spanish Base and . .

. . . Its Builders

It was a big day for all concerned when the contract was finally signed last month for the port facilities at the Rota base of the U. S. military setup being fashioned in Spain. The first bids had been rejected when the lowest tender had been found to contain a $5 million error, but the same bidder was low again on the second go-around.

Shown receiving the $17,372,000 contract are Roger H. Corbetta, president, Corbetta Construction Co., New York, and Jose Toran Paleas, general manager, Construcciones Civiles, S.A., Madrid, the joint venturers. On the giving end is Jeremiah J. Collins, chairman of the combine of American contractors—Brown & Root, Raymond Concrete Pile Co., and Walsh Construction Co.—which manages the Spanish base program for the U. S. Bureau of Yards & Docks, construction agent for the U. S. Air Force.

Included in the job: a 1¼ mile breakwater, a 1,000x350-ft wharf and a T-shaped petroleum pier. The breakwater will require 1,600,000 cu yd of rock and a facing of 9,000 "tetrapods," three-leg precast concrete units weighing from 8 to 25 tons each. The petroleum pier will be a steel H-beam structure carrying a precast concrete deck. And the wharf will be assembled from precast concrete blocks that may weigh as much as 70 tons a piece.

Rota, just across the bay from Cadiz, will be the key supply point for the Spanish airbase complex, the starting point for its 475 mile fuel pipeline, and the place where carrier-based planes can be put ashore and serviced.

No Parking

San Francisco plans new strategy to speed up the construction of garages

San Francisco has started an attack on its downtown parking problem by taking three new steps to speed construction of garages.

The first two moves were made by San Francisco's Board of Supervisors. It set itself up as its own parking authority and, at the same time, withdrew condemnation plans for a mid-town block to permit private developers to build a $4-million garage on the site. The third action—initiated by the parking authority—is an attempt to provide the city with its first non-profit public garage.

•New authority—San Francisco has had a parking authority for several years—and it will stay in business as an advisory body. The Board's action in declaring itself a parking authority was a legal maneuver to operate under the State Parking Act of 1949.

This act states that the city can create a parking authority or declare itself to be one. By doing both San Francisco—when it condemns land and builds parking facilities—will be safer from lawsuits because it is operating under a specific law rather than merely under charter or general law as before.

Under this new approach to picking up sites for parking projects the city controller can approve use of city money without assuming any liability. The system seems to be working as planned. As soon as the Board took action, the controller released $2 million that already had been voted for a garage site at Fifth and Mission Sts.

• Private development—By abandoning its own long-range program to condemn land and build an Ellis-O'Farrell St. garage the parking authority has cleared the way for private developers to put up a 900-car garage on the site.

Under present plans Fairfax Services, Inc., has been given 150 days from Nov. 5 to start construction of a 12-story pigeonhole garage-shopping center. A new corporation, San Francisco Pigeon Hole Parking, Inc., will be set up to build the project and to lease it to S. E. Onorato, who operates other downtown garages.

The firm now is negotiating for additional land on the block. If it is successful the project will be expanded to a $10-million development and include a hotel, more store space and additional parking capacity.

• Non-profit project—Meanwhile, the parking authority is trying to obtain a 1,000-car, low-rate public garage under a new state law. This measure permits the usual bid procedure to be by-passed in leasing property for a non-profit, off-street parking project.

Shoppers' Downtown Parking Corp., an organization of downtown merchants, has submitted the first proposal. It wants the city to acquire the Fifth and Mission Sts. site through condemnation proceedings. The site then would be leased for 50 years to the corporation. It in turn would build and operate a $1.5-million facility.

This plan would depart from the parking authority's usual method for using private capital to augment off-street parking facilities. Ordinarily, the city leases property on a bid basis to a developer. He erects and operates a garage and returns a portion of the profits to the city since the main competitive element in the bids is the percentage of profits guaranteed to the city, the non-profit nature of the new proposal makes it less adaptable to bidding.

Under the non-profit scheme parking rates would have to be just high enough to pay off building and operating costs, and land rental, the merchant's group has suggested that rates can be held down if the city demands a rental that would only cover interest on land acquisition costs instead of trying to recover the entire amount.

A.S.C.E. Picks Seven Wonders

An idea born of the centennial celebration of the American Society of Civil Engineers back in 1952—for the local sections to pick the seven civil engineering wonders of their respective areas—blossomed to national proportions this week with the announcement by the A.S.C.E. Board of Directors of seven civil engineering wonders of the U. S. Picked by vote of a special committee of officers and directors, the selections are as follows, in alphabetical order:

1. **Chicago Sewage Disposal System**
2. **Colorado River Aqueduct**
3. **Empire State Building**
4. **Grand Coulee Dam and Columbia Basin Project**
5. **Hoover Dam**
6. **Panama Canal**
7. **San Francisco-Oakland Bay Bridge**

The committee, appointed a year ago by President Wm. Roy Glidden, is headed by James Kip Finch, dean emeritus of engineering, Columbia University. Other members are Waldo G. Bowman, editor, Engineering News-Record; Louis R. Howson, Chicago consulting engineer; Malcolm Pirnie, New York consulting engineer; Daniel V. Terrell, dean of engineering, University of Kentucky; and Ralph A. Tudor, San Francisco consulting engineer.

Channel Widening

Contractors bid tightly for Calumet-Sag project

Fourteen bids, the low one 46% below the Engineers' estimate were received last week by the Chicago District Office of the Corps of Engineers for widening the western three miles of the Calumet-Sag Channel, connecting Lake Michigan with the Illinois waterway system.

Low bidder was the Mary Construction Co., of Cape Girardeau, Mo., whose bid was $1,786,000 compared to the Engineers' estimate of $3,296,000. The second low bid was 42½% below the Engineers' estimate and the third low was 37% under.

There was no clear-cut explanation of the wide disparity between the low bid and the Engineers' estimate. However, three factors undoubtedly helped to account for the sharp-pencil bidding. Competition for this type of work is intense in the Chicago area at this time; timing of the job is excellent for a wintertime excavation project; and heavy excavation equipment for the work is readily available with a minimum of "moving in" expense involved.

Award of the contract and start of work is expected within a month. This is the first phase of widening the 16.2-mi Calumet-Sag Channel from 60 to 225 ft. Completion of this stage is expected in a little more than two years.

The entire $188-million project also includes raising, lengthening and rebuilding a number of bridges.

This first-stage construction was made possible by a $4-million appropriation voted by the last Congress. If Congressional funds continue to flow on schedule, the entire project will be finished in six years.

Buffalo Gives Green Light For New High-Level Bridge

Parsons, Brinckerhoff, Hall & Macdonald, New York City consulting engineers, have been authorized to go ahead with the job of designing a new $12-million, high-level bridge for Buffalo.

The four-lane span, which will be 100 ft high, will cross Union Canal near the Buffalo-Lackawanna city lines. The site is served now by a lift bridge. The new structure will permit clearance for ore-carrying lake vessels and eliminate a highway traffic bottleneck.

Borings already have been taken on much of the land needed for approaches. Actual construction is expected to take from 2 to 2½ years.

Water Agreement

Future supply assured for Denver, Air Academy from Blue River source

A consent decree assuring Denver of sufficient water for a metropolitan population of 1,500,000 has been signed by state water officials and Bureau of Reclamation representatives.

The decree guarantees Denver an average of 177,000 acre-ft of water annually from the Blue River, a tributary of the Colorado River, providing Reclamation Bureau power loss is replaced on a kilowatt for kilowatt basis.

The Blue River water affected by the court decree is currently used only for generation of electricity by the Reclamation Bureau downstream on the Blue River, at Green Mountain Dam.

This Blue River supply, in addition to other sources being tapped by the city, will provide enough water to meet the needs of a future population twice the present size of metropolitan Denver.

• **Avert trial**—The out-of-court settlement came a day in advance of a scheduled trial in U. S. District Court seeking to establish Denver's claims to Blue River water. The decree also gives 20,000 acre-ft of Blue River water annually to Colorado Springs, site of the new U. S. Air Force Academy.

In preparing for the legal test, Denver had hoped to get a court ruling that municipal domestic water needs transcend power generation rights.

Under the decree, the federal government does not give up its rights to the Blue River water. The decree stipulates that Denver and Colorado Springs may use the water only for municipal purposes and then only if they replace the power loss.

Denver probably will make up this power replacement with a hydroelectric generating plant to be constructed at Gross Dam in South Boulder Creek Canyon, 32 mi northwest of Denver.

• **No irrigation**—The court decree specifically prohibits use of the water for agricultural purposes on the Eastern Slope. It authorizes an adequate supply for "domestic, industrial, yard, ground and park care, storage, fire, sewage, military, and governmental" purposes.

Western Slope users were guaranteed they will not be deprived of water allotted under the Big Thompson Project, of which Green Mountain Dam is a part. Denver or Colorado Springs cannot divert any Blue River water until Green Mountain Dam is filled each year to its capacity of 154,654 acre-ft.

Denver will not be able to start using its Blue River water until about 1960. That's the target date for completion of the 23-mi Montezuma Tunnel which will carry the Blue River water from Dillion to Denver's South Platte water shed. This tunnel is a major project in the $75-million water system improvement bond issue approved by Denver voters in May of this year.

Revive Food Center

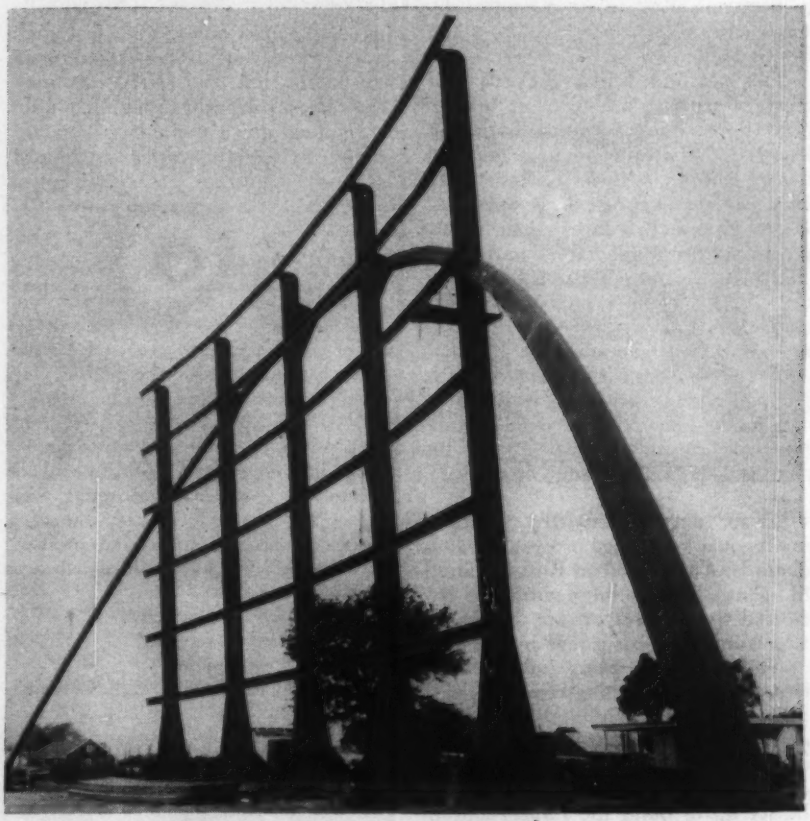
Philadelphia pact ends $100-Million controversy

Plans are being revived for Philadelphia's controversial $100-million food distribution center because of a new agreement between the city and Philadelphia Food Center, Inc., announced by Mayor Joseph S. Clark, Jr.

The agreement, worked out by public officials and executives of the Greater Philadelphia Movement after more than a month of negotiations, salvages the project which was abandoned in late summer because of criticisms voiced by prominent realtor Albert M. Greenfield and others (ENR Sept. 22, P. 49). Both Greenfield and Harry Batten of the Greater Philadelphia Movement were consulted by the mayor in working out the new plan, and their support seems assured.

Two significant changes have been made in the original plans. Nine public directors will be chosen instead of the three first proposed, and development of the project will be carried out in stages over a period of years. At first, it was planned to construct the entire center at one time.

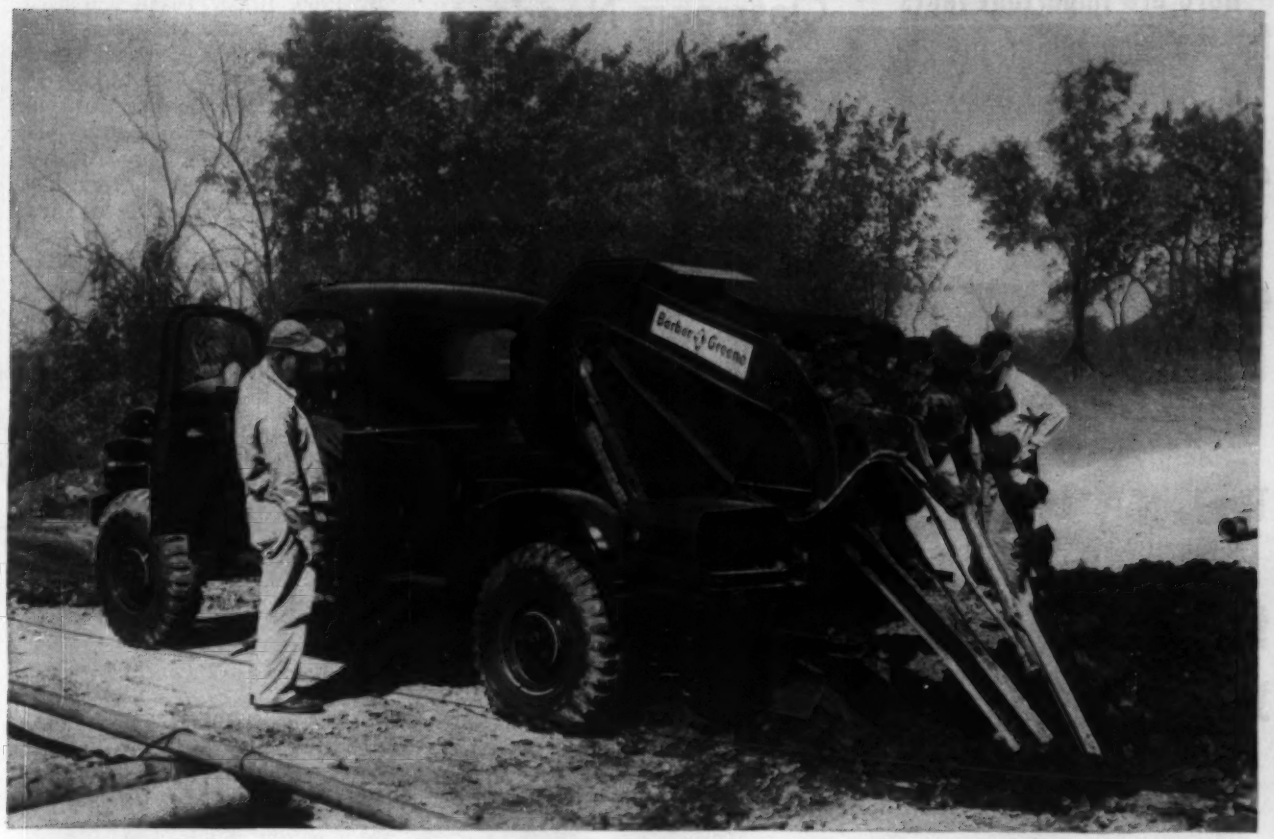
While the city will acquire the land for the food center, title to the land will remain with the Redevelopment Authority until each segment of the center is ready for actual construction, leasing or sale.



Support for Outdoor Theatre Screen

Spanning 200 ft, this graceful tapered arch braces the frame for a large curved outdoor theatre screen near Decatur, Ala. It is fabricated of steel top and bottom channels with side and stiffener plates of varying thickness. Leaning 20 deg it springs from a line 19 ft 6 in. in front of the center column. The screen frame leans 5 deg in the opposite direction.

Consisting of circular, parabolic, flared or conical members, the structure presented an interesting detailing assignment for Decatur Steel and Iron Co., which also did the fabrication. Architects were Cail, Yates and James of Marietta, Ga. and the structural engineer was T. Z. Chastain of Atlanta, Ga. George Blaxton of DISCO supervised erection.



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Diameter of objective lens	1.81 in.	1.485 in.	1.69 in.
Field of view (in minutes of arc)	64'	52'	60'
Coated optics	YES	YES	YES
Covered leveling screws	YES	YES	YES
Can you easily replace worn leveling screws in the field?	YES	NO	YES
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Classroom Needs

Educators in Los Angeles, Rhode Island ask new aid

After taking inventory of future classroom needs, Rhode Island and Los Angeles educational leaders are looking for ways to finance new school construction.

• **In Los Angeles**—The city schools district reports that a new bond issue of over $100 million will be needed for classroom construction if the city is to provide fulltime schooling for the increased attendance expected by 1962.

The recommendation for a third multi-million dollar bond issue within a six-year period is the result of a special survey on future classroom requirements in relation to bond capacity. The survey indicates that by 1962—when funds from previous bond issues are exhausted—some 47 elementary schools, 11 junior high schools, 5 senior highs and over 700 extra classrooms will still be needed.

• **In Rhode Island**—A sharp increase in the state's aid to education—including substantial sums for new buildings—has been recommended by a conference of Rhode Island school superintendents.

By 1960, Rhode Island will need $62.2 million worth of new or renovated school buildings. Present state aid to local school systems exceeds $5 million a year. But the educators want increases to bring the total to $12 million, including an immediate rise of $2.5 million. About one-third of this would be earmarked for new buildings.

The recommendations back up a State Department of Education report suggesting expansion of a state school-aid law passed last spring. This new law limits state aid for local school departments to about $7 million a year.

Army Engineers Shift Nevada Defense Work

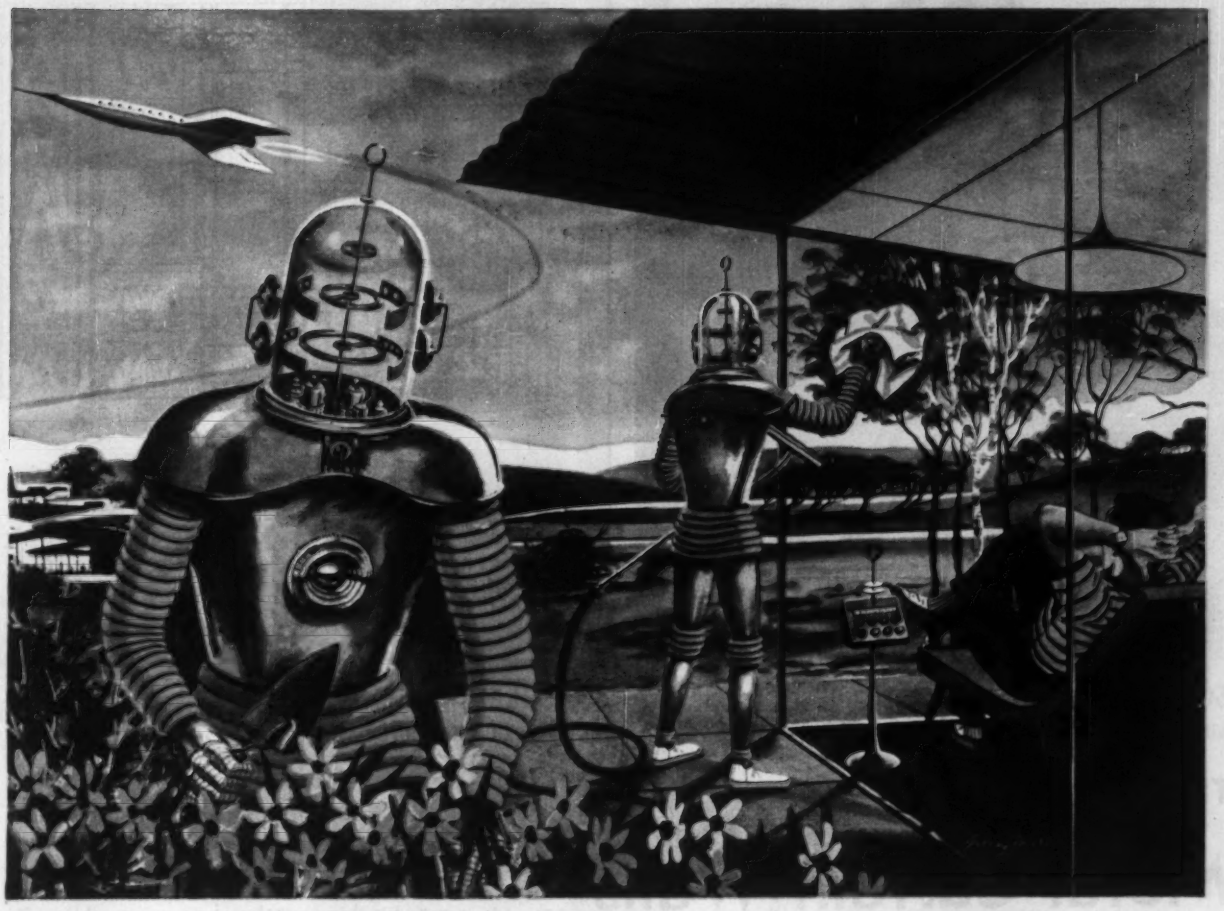
All military construction in the state of Nevada, with the exception of Lincoln and Clark counties, has been transferred from the San Francisco to the Sacramento Corps of Engineers district.

Major work involved is in the Reno area, including present and planned additions to the Stead Air Force Base. Other military construction will include aircraft warning stations in northern and central Nevada.

The Sacramento district's civil works program will continue to cover the area from Suisun Bay to the crest of the Wasatch Range in Utah.

Public Park Tops a Six-Story Garage

Mellon Square Park—Pittsburgh's new recreation area built on the roof of an underground garage—is now ready for formal dedication. The garage provides six stories of parking space, enough to handle 900 cars at a time (ENR May 12, p. 60). Because of the park's continuously-flowing fountain and cascades, waterproofing the block-square roof to protect facilities below was one of the most important aspects of design. Waterproofing treatment applied over the entire area of the park proper consists of five plies of tar-impregnated fabric, six alternating layers tar pitch.



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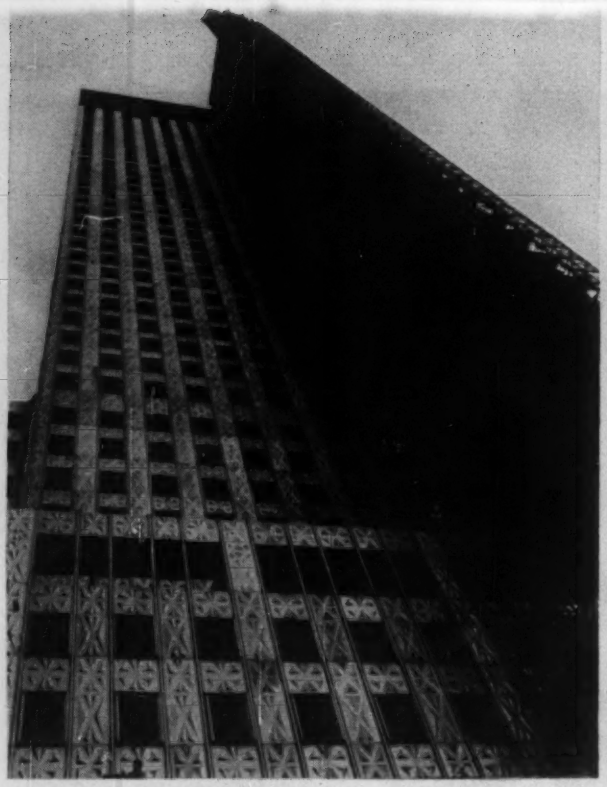
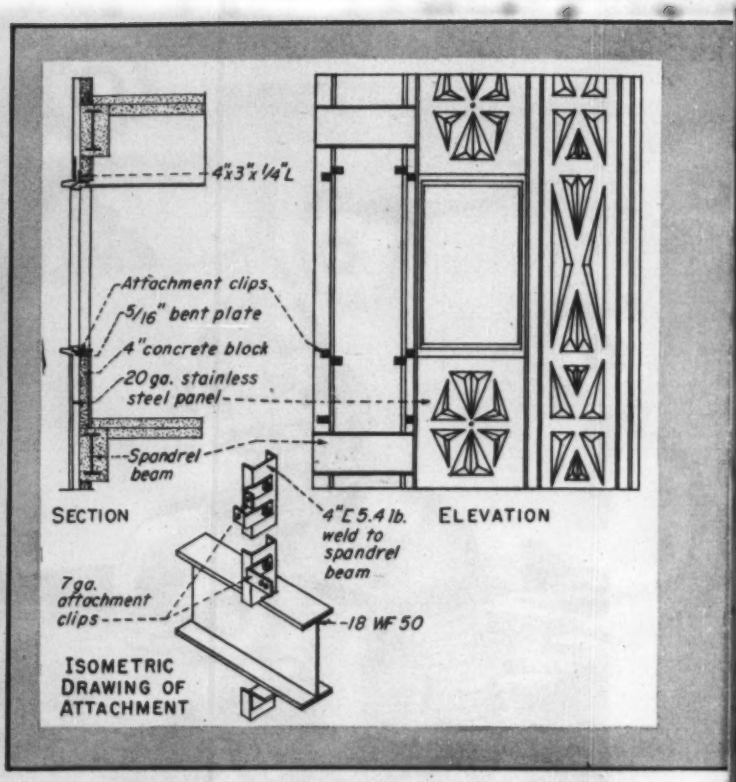


SOCONY MOBIL BUILDING in New York City with 7,000 panels will be one of newest metal-clad structures.



STAINLESS STEEL panels for Socony Mobil Building have trihedral pattern to prevent waviness and reflection.

The Trend to Buildings With . . .

Metal Curtain Walls

The ideal metal curtain wall is one that is strong, durable, fire resistant, insulating, sound deadening, easily handled and attractive. It must also be weatherproof and have a vapor-proof inner face, be adaptable to all types of building framing, and require a minimum of maintenance.

That's what came out of a conference on metal curtain walls, conducted in Washington last week by the Building Research Institute of the National Research Council. More than 450 engineers, architects, manufacturers, contractors and researchers from all over the country, attended.

William H. Scheick, Executive Director of the Building Research Institute set the stage for the conference with his definition of the metal curtain wall, "an exterior wall of non-bearing metal panels attached to a structural frame . . . designed to carry wind loads but not vertical loads."

Specific characteristics of the ideal curtain wall were set forth by John H. Callender, Research Associate at Princeton University. These are: (1) durability, a minimum 40 year life expectancy for the panel, preferably 100 years;

(2) light weight, about 5 psf preferred, 15 psf would be the absolute maximum weight;

(3) strength, enough to resist 100-150 mph winds;

(4) thickness of 2 in.—maximum 5 in.;

(5) large size for panels, 25 to 100 sq ft—minimum 10 sq ft;

(6) fire resistance of 2 hours;

(7) insulation, U = 0.05 Btu—maximum 0.15;

(8) sound reduction of 50 db,—minimum 25 db;

(9) moderate cost—maximum $5 psf in place;

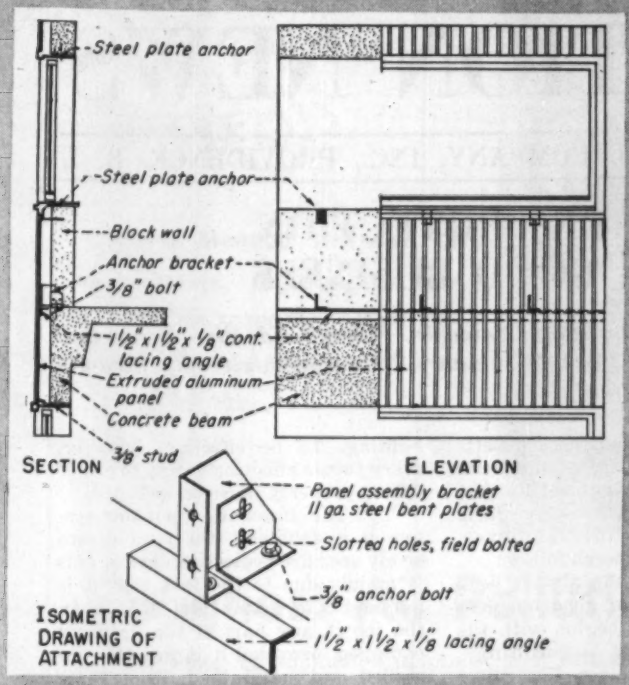
Obtaining all these qualifications in any one panel is difficult, but researchers are coming up with new and better designs with varying materials. Some of these are: (1) porcelain enameled steel, (2) stainless steel with plain, textured or special finished surface, (3) aluminum which is available in plain or textured surface, porcelain-enameled, or plain or color anodized.

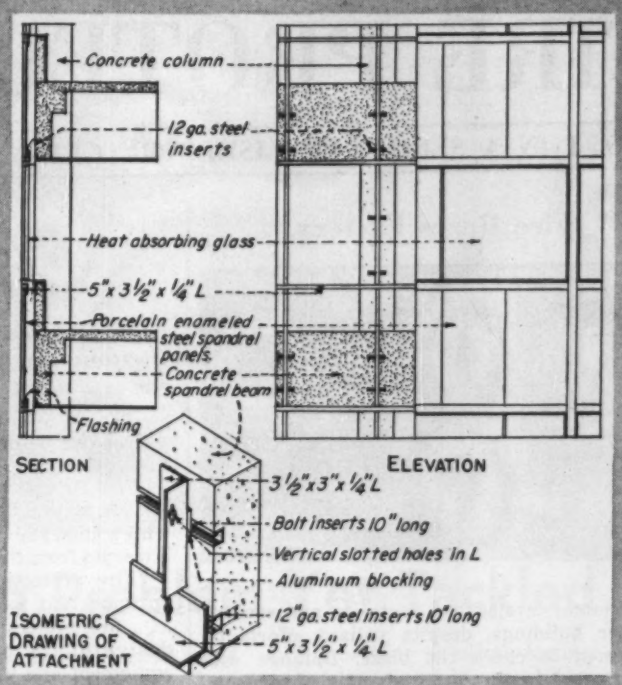
• **Cost factors**—A big factor in the cost of metal curtain wall construction is that of erection. Norman S. Collyer, President of F. H. Sparks Co., Inc., a firm that has handled many curtain wall erection jobs, gave members of the conference these pointers:

(1) panels should be designed to be erected from the inside of the building; (2) as much fabrication should be done in the shop as possible; (3) weight and size of the panels should be such that they are not heavier or larger than can be handled by four men, or raised by a job hod hoist; (4) the best curtain wall joint is the standing seam joint—self aligning during erection and does not open up with expansion or contraction of the panel.

• **Design factors**—The two day meeting developed these hints for designers: Thermal properties that should be taken into account for insulation include the fact that it should be designed with high resistance to heat flow, and that consideration be given to the thermal bypass created by the structural members of the wall and the joints between panels. Heat capacity of panel itself should be considered, as should the contraction and expansion of the wall due to temperature changes, and the effect of the color of the outer skin on the heat transfer characteristics of the walls.

In regard to water in the panels, the designer should remember the danger of formation of condensation within the panel, the fact that joints of the panel must be tight and that inner faces of the wall should be warm enough to prevent formation of condensation on the interior.





EXTRUDED ALUMINUM panels for Wyatt Building, Washington, D. C., have corrugated section for rigidity.

PORCELAIN-ENAMELED STEEL panels of Standard Federal Bank Building, Los Angeles, Cal. feature aluminum honeycomb core.

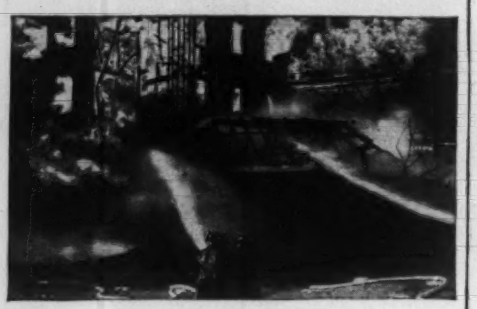
Comparative Curtain Wall Summary

Building	Location (Year)	Column Cover or Mullion Width inches	Column Cover or Mullion Length ft-in	Column Cover or Mullion Th'k's inches	Spandrel or Wall Panel Width inches	Spandrel or Wall Panel Length ft-in	Spandrel or Wall Panel Th'k's inches	Exterior Metal Formation	Exterior Metal Gage	AISI Type	Insulation Material	Insulation Th'k's inches	Insulation Air Space	Insulation Vented	Fastening Method	Back-up Wall
Chrysler Building	New York City 1929							roof sheet metal		302						nailing concrete
Empire State Building	New York City 1931	10&22	1 story					column & mullion covers	18	302	none		6±"	no	bolted to brackets	masonry
General Electric Turbine Building	Schenectady N.Y. 1948	24	5-9	1⅛	24	7-9	3¼	corrugated panel	20	302	glass fiber	1½	partial	no	welded to girts 24" o.c	furred metal lath & plaster
Truscon Warehouse	Baltimore, Md. 1949				36&60	10&4	4	flat V formed	24	302	glass fiber	2	1½"	no	hung by clips and bolted	furred metal lath & plaster in office space
Alleghany Ludlum Laboratory	Brackenridge, Pa. 1950				24	6-6⅛	3	corrugated panel	22	302	glass fiber	1½	partial	no	welded to 12" o.c.	
Alleghany Ludlum Gas Storage Bldg.	Brackenridge, Pa. 1951				24	13-0	3¼	corrugated panel	22	302 430	glass fiber	2	partial	no	welds	
Republic Building Pent House	Cleveland, Ohio 1950	6¼	5-6		24	10-6½	2	ribbed	24	302	glass fiber	3	2"	yes	screws and bolts	furred metal lath & plaster
525 Wm. Penn Place	Pittsburgh, Pa. 49/50				48	5-0	2½	herringbone	20	302	none		2½"	8 ⅜" holes	riveted and bolted	8" brick
Fairless Works-Office & Service Bldgs	Morrisville, Pa. 1953				24	7-0	3¼	corrugated panel	18	430	glass fiber	1½	partial	no	bolts and welds	metal panels
Armco Laboratory and Dispensary	Middletown, O. 1950				12&16	24-6	2&3	corrugated panel	18	302	glass fiber	2	partial	yes	hook bolts	furred rock lath & plaster or hardboard
Gateway Center	Pittsburgh, Pa. 51/53	54½ &16	14-9	5½ &7¾	42	5-7	4½	11½" strips	22	430	porous concrete	1	none		bolts & brackets	furred metal lath & plaster
Westinghouse Research Laboratory	Churchill Boro Pa. 1954	10	12-7¼	3½	52	5-7¾	2¼	ribbed	24	302	glass fiber	1¼	1¼"	yes	clipped to angles	none
Socony Mobil Bldg.	New York City 1955	48±	11-9	1½	56	5-1½	1½	pressed panels	20	302	on back-up		1½"	yes	clips, battens and bolts	4" cinder block
Greyhound Bus Terminal	Chicago, Ill. 1953				12	24-0		1½" ribs-6" o.c.	18	302					angle girts	masonry
General Motors Technical Center	Detroit, Mich. 51/53				54	5-0	2	flat porcelain enamel	11		Perlite	1¾	none		set in extruded frame	none
Standard Federal Bank Building	Los Angeles, Calif 1953				42	6-6	⅛	flat porcelain enamel	16		Aluminum honeycomb	½	2¾"	yes	set in extruded frame	6" concrete
Mile High Center	Denver, Colo. 1955	26	6-0		26¼	7-0	1¾	cast aluminum and porcelain enamel	¼" 18		glass fiber	1 ⅜	yes	yes	hung and bolted set in extruded sections	concrete spandrel radiator enclosure
Statler Hilton Hotel	Dallas, Texas 1954				80	2-2±	1½	flat & formed porcelain enamel			glass fiber	1¼			set in extruded sections	lath & plaster
Alcoa Building	Pittsburgh, Pa. 1952	27	12-0	6½	72	12-0	6½	pressed aluminum	.125				1½" to 8"		angle brackets & bolts	aluminum lath & perlite concrete
99 Park Avenue	New York City 1953	12	21-3		51	21-3	4½	pressed aluminum	.125		glass fiber	¾	1" to 5"	yes	angle brackets & bolts	4" cinder block
Republic Bank Building	Dallas, Texas 1955				38¾	3-11½		pressed aluminum	.125		glass fiber	1½	3½"	yes	bolted to anchor angle	radiator enclosure
Lever House	New York City 1953							mullions	16	302	cellular glass block	2	2¾"	yes	4" cinder block	4" cinder block

FIRE PROTECTION NEWS

NO. 1 IN A SERIES, PUBLISHED BY GRINNELL COMPANY, INC., PROVIDENCE, R. I.

Fire Razes Factory



Flames leveled two factories and several other buildings, despite valiant efforts of firemen to check the blaze. Damage was estimated in the hundreds of thousands of dollars. Several people were seriously injured. Another case of the high cost of NO SPRINKLERS.

313 Fires Cause $202 Millions of Damage

Last year hit a new, all-time high for "large loss" fires, those that exceed $250,000. A total of 313 big fires were reported in the United States and Canada. Most of the increase in the number of fires occurred in the mercantile classification, which jumped from 29 fires in 1953 to 54 last year. Warehouse and other storage areas rose from 48 to 54 and the transportation section climbed from 39 to 57. In commenting on the large fire loss, National Fire Protection Association said: — "Most of the large loss building fires in 1954 would not have occurred had the buildings been completely protected by a properly installed and maintained sprinkler system. The value of a complete sprinkler system is certainly obvious."

Chemical Plant at Height of the Fire

This is the way the Arnold Hoffman Chemical Plant in Dighton, Mass. looked while a fire "raged" inside. The fire, however, never amounted to much, because a Grinnell Automatic Sprinkler System went into operation, snuffing out the fire instantly. Damage was negligible and no one was injured.

FIRE PROTECTION IS GOOD BUSINESS

E. J. Meyers, Assistant Manager, Safety and Fire Protection Division, E. I. du Pont de Nemours & Company, gives his formula for safe plant design

Speaking before the Massachusetts Institute of Technology's Conference on Fire Protection Engineering, Mr. Meyers expressed some basic facts which deserve a wider audience. Excerpts from this speech follow:

"Fire protection has always been an important part of good business . . . fire protection begins with the design of the plant — buildings, equipment and processes. The object is to remove, as far as possible, the human factor by making protection permanent or automatic.

". . . In the minds of many, fire prevention and fire protection are confined largely to care in preventing or safe-guarding the common causes of fire, such as the use of matches, smoking, spontaneous combustion of oily rags, and of defects existing in lighting. To be effective, however, every factor affecting safety to either life or property must be included.

". . . The automatic sprinkler system is undoubtedly the most extensively used fire protection device. This is mainly due to the fact that it is automatic in action and always on the job in any part of the property equipped, provided it is properly installed and maintained. It prevents destruction of property, interruption to operations, and the loss of lives. A majority of fires are small at the start and can usually be put out with a small amount of water. The sprinkler automatically supplies this water at the needed time without the aid of human agency, provided it is a standard installation properly maintained and backed up with adequate water."

GRINNELL PROTECTOSPRAY SYSTEM COOLS OFF LP-GAS TANK CAR

This tank car full of liquefied petroleum gas is at a siding where its contents will be transferred to industrial storage tanks. Any leak brings the chance of fire, in which case the Grinnell ProtectoSpray System operates in the following manner:

The drenching water blanket provides instant cooling, to reduce internal tank pressures and to prevent rupture. Positive air turbulence is created, even in still air, to help dilution of leaking gas by the inert gases present in the air. Water-vapor dilution assists in thinning out gas-air mixtures toward the point where they will no longer burn. And fire, if it occurs, is localized, permitting safe disposal of the gas by burning where it escapes, thus reducing the fire-explosion hazards downwind or downgrade.

Grinnell Automatic Fire Protection Systems are the result of more than three quarters of a century of continuous research and development. Grinnell ProtectoSpray is just one of the many systems engineered to protect special hazards. Water spray, air foam, carbon dioxide, and dry powder systems are available to protect all classes of hazards.

Smog:

It's a menace still full of mysteries, requiring a formidable research effort before Los Angeles can be free of the . . .

Toughest Air Pollution Problem Yet Tackled

The smog of Southern California has gotten comedians as many laughs as has the town of Cucamonga. But it has long since ceased to be funny. There are real serious questions to be considered about what smog might do to the southern California boom, what smog might mean elsewhere.

There's no evidence as yet that smog has slowed down the influx of new residents, let alone chased established residents away. But there's a growing fear in southern California that this can happen if smog—and the nationwide publicity it gets—grows worse.

City and county officials are talking seriously about the possibility of having to restrict building of new industrial plants and expansion of old. Any such restriction could throw out of kilter the area's expansion economy.

Every year at this time the uproar over smog is at its height. September and October are the worst smog months, because of weak winds, frequent temperature inversions, and lack of rain. But this season the excitement is at a higher pitch than usual.

• **LA's system of alerts**—One reason is the dramatizing value of a new system of smog alerts instituted by the Los Angeles County Air Pollution Control District. For the Angelino, the day's weather forecast includes a "Smog Green" or a "Smog Red." "Smog Green" means that the famous southern California climate has a chance. "Smog Red" means that weather conditions—chiefly air movement and the level of the area's temperature inversion—are ripe for heavy smog.

On a Smog Red day, APCD may declare one of three alerts of mounting seriousness.

A first alert means that pollutants are approaching the "maximum allowable concentration for the population at large." Private citizens and industry are called on to take certain voluntary steps—chiefly curtailment of vehicle use and of incineration.

In a second alert, the Air Pollution Control officer, with concurrence of the Air pollution Control Board, is empowered to take mandatory action on curtailment of traffic and industrial operations, details of which are being worked out.

In a third alert—if it ever comes, and the experts don't think it will—the Air Pollution Control Board can call on the governor to declare martial law bringing a near-complete standstill in the county, except for absolutely necessary services.

Calling of an alert is governed by air samplings at three stations (eventually to be increased to 14)—one an APCD headquarters in downtown Los Angeles, one in industrial Vernon, and one on the Cal Tech campus in Pasadena.

• **Degrees of pollution**—Degree of concentration in the air of four pollutants determines the alert stage. A first alert is called when any of these pollutants reaches the levels specified: carbon monoxide, 100 ppm; nitrogen oxides, 3 ppm; sulphur oxides, 3; and ozone, 0.5. Second alert levels are 200, 5, 5 and 1.0, respectively, and third alert 300, 10, 10, 1.5.

Ozone is considered the handiest check, because of multiplication of ozone is one of the most notable features in the Los Angeles smog. It's tested by taking samples of air at half-hour intervals (shorter intervals during or approaching an alert), feeding it to a chamber containing specially treated rubber. Degree and nature of rubber cracking induced gives the measure of concentration.

Other factors are continuously measured by spectrophotometers and other instruments.

The alert system was drawn up by a committee headed by Dean Stafford Warren of UCLA's Medical School. Its purpose is to protect residents of the county from effect of smog on health. (Medical authorities are agreed only in the belief that there is some effect, at least in severe sieges; just what and how much is still in question.)

Since the system's adoption last June, only first alerts have been called (though on Sept. 13 the ozone reading reached .90 ppm, .10 below the second alert level).

The alerts, the ban on open burning, and the rest of the current activity and excitement don't mean that smog has suddenly worsened this year. According to APCD statistics, things aren't getting worse, even if they're not noticeably better. Some 3,390 tons of significant pollutants are entering the county's atmosphere daily during 1955, while some 3,730 were entering the air during 1948, the district estimates.

• **An uphill battle**—That there should be even a small reduction is remarkable in view of such facts as these: L. A. County population increased from 1,943,349 in 1940 to 2,767,474 in 1950 to 3,135,871 in 1954; vehicle registrations increased from 1,176,174 in 1940 to 1,903,670 in 1950 to 2,285,804 in 1954; "value added

through manufacture"—a measure of manufacturing activity—rose from $2 billion in 1947 to a sum of $4.8 billion in 1954.

But this kind of relative progress is hard to sell to the Los Angeles citizen whose eyes are burning on a Smog Red day. He tends to forget the 300-plus smog-free or relatively smog-free days a year, and remember the 30 to 40 days of "moderate to heavy" smog.

Even the experts aren't entirely sure whether conditions are worsening or just not getting any better in net effect. In either case, the Los Angeles smog problem is critical and tremendously difficult to solve. It has already cost the area uncalculated sums—in controls, in such intangibles as worker efficiency and absenteeism, in agricultural damage (estimated at $3 million a year, and bringing about a revolution to crops that are relatively smog-proof). And more serious still are the inherent implications for the future.

• **New kind of smog**—Unfortunately for it, Los Angeles has the doubtful honor of being the first metropolitan area to suffer seriously from a new kind of smog. This isn't simply the ash, soot, smoke problem that has been the familiar blight of industrial centers, and that can be largely cleared up, as Pittsburgh demonstrated, by a single all-out push.

The Los Angeles variety is something created by certain photo chemical reactions in the atmosphere. Various organics react with certain natural atmospheric constituents in the presence of sunlight to form new products that define smog: that crack rubber, irritate eyes, reduce visibility, blight vegetation, and have an as-yet unspecified effect on health.

Research to date has pretty much determined that the most critical pollutants are hydrocarbons—particularly olefins—which are emitted from petroleum in any state—during production, refining, shipment, handling, in vehicle operation, etc.

Los Angeles suffers because the Los Angeles Basin is much of the time a perfect reaction chamber. The contaminants are held in by mountains on three sides, a prevailing (but weak and erratic) wind from the other, and a temperature inversion that makes an effective lid. Another curve thrown by nature at the Angelino is the fact that the basin has, and always has had, a high concentration of ozone. Ozone is both a major element in and product of the reaction process, and is largely responsible for such smog-defining symptoms as eye irritation and rubber cracking.

This basic theory of smog was entirely unsuspected when the Los Angeles Air Pollution Control District was formed. Its discovery is a major scientific achievement of the district and its consultants, notably Cal Tech's A. J. Haagen-Smit.

• **Research needed**—But though the basic hypothesis is generally agreed upon by the scientists, there are still some doubters and no one thinks that everything is known that needs to be known. There is a formidable amount of research needed to verify the theory, to determine—if it's valid—the exact mechanics, and exactly which substances (the particular kind of hydrocarbons, for instance) are most significant and where they come from. Until smog is entirely understood, there is only a certain amount that can be done in control—and still keep modern industrial life in motion. Scattershot in control regulations could be economically maiming without working a cure.

The body officially charged with combatting smog in Los Angeles County is the APCD, established in 1947 under a state law. Governing body of the district is the County Board of Supervisors, whose members are also the Air Pollution Control Board.

Since a reorganization last December, APCD is headed by an Air Pollution Control Officer, under whom are directors of enforcement and of engineering and research. (The latter post has been unfilled since the resignation last June of Gordon P. Larson, who had headed the district from 1948 till the reorganization. Air Pollution Control Officer is Smith Griswold, a long time county employe who has been assistant County Administrative Officer. Louis J. Fuller, a former police captain, is director of enforcement.)

The district currently has a staff of 233, operating on a budget this year of $2.5 million.

APCD gets a good deal of help and a good deal of heckling from other organizations, official and unofficial. It will profit from new federal smog-study funds authorized by the last session of Congress. It profits from research carried on at state and private universities in California.

• **Private assistance helps**—Another major source of assistance is the Air Pollution Foundation, a non-profit corporation established two years ago by an impressive group of business, industrial, educational and other civic leaders. The foundation is operating this year on a budget of $750,000, made up from private contributions. Headed by Dr. Lauren B. Hitchcock, a chemical engineer with distinguished educational and industrial background, it aims to coordinate and supplement other research. It currently has projects farmed out to such concerns as Battelle Memorial Institute, Southwest Research Institute, Ralph M. Parsons Co.

In addition to these official and semi-official bodies, there have been a number of entirely unofficial groups—such as the Citizens Anti-Smog Action Committee—whose principal function is to excite the politicians to action, some of it wise and some of it not so wise.

In spite of the limitations of smog knowledge, much can be done, and has been done, to limit pollutants. APCD has worked hard to get controls on all known sources of significant pollutants—as well as some that are only suspected. Many of the controls have had to be especially devised by cooperative efforts of industry and APCD, and for many sources effective controls have yet to be found or invented.

On the basis of present knowledge, the Air Pollution Foundation has given this estimate of pollutant sources (among the pollutants: hydrocarbons, nitrogen dioxide, sulfur dioxide, aldehydes, organic acids, aerosols)—45% from automobile, truck and diesel operations; 20% from domestic use of natural gas and incinerator burning; 18% from oil industry operations; 10% from miscellaneous industrial operations; and 7% from evaporation occurring at service stations and gasoline losses.

Of the three major categories—industry, home, and autos—most progress has been made in industry, though industry continues to bear the brunt of uninformed criticism.

The oil industry alone has spent an estimated $25 million in research and control installations. And with results: In spite of increased production and refining operations, its pollutant contribution has been reduced from a daily total of 1,300 to an estimated 600 tons (Air Pollution Foundation estimates). Sulfur, at first erroneously thought to be the principal cause of smog, has been reduced by 50%. (But the net gain to the basin's atmosphere hasn't been so impressive, due to the increase in industrial and private use of fuel oil.)

• **Oil industry involved**—Though cooperation between the oil industry and APCD has been generally excellent, it's not without friction. An example: Two major oil companies (Shell and Union) have joined with three other concerns in a court action

contesting the district's use of the Ringelmann Chart to measure allowable smoke opacity. The plaintiffs contend that the shadings on the chart do not allow for light conditions, position of observer, etc. Such conflicts are probably inevitable in the kind of pioneering being done.

Other industries have also spent impressive amounts on controls. Altogether, APCD has issued permits for $30 million worth of industrial control equipment.

Currently, the noisiest issue is the backyard incinerator, long a fixture in the county. In Los Angeles proper and many other municipalities of the county there is no provision for pick-up of combustible rubbish. Residents must dispose of it themselves, and most do so in their own single-chamber incinerators, estimated by APCD to number more than 1.5 million.

Exactly what the incinerators contribute to significant pollution is not known. Most members of the Los Angeles City Council think the contribution is negligible, and loudly say so. But APCD, Air Pollution Foundation, and others have concluded that the incinerators are an obvious source which can be eliminated and therefore should be, in an all-out attack on the problem.

• **Cities affected**—The municipalities undeniably have a major problem in collection and disposal. Refuse now burned in backyard incinerators is estimated by APCD at 4,000 tons a day. There are only nine municipal incinerators currently in operation in the county, and most of these fail to meet APCD standards. The city of Los Angeles has two large incinerators —one of 400/ton/day and one of 100/ton/day capacity—which it has been unable to use in spite of extensive modifications. The only likely solution for most of the disposal is landfill.

What is generally agreed to be the greatest single source of smog is the most formidable problem in control—the internal combustion engine, on buses, trucks, and the county's 2 million automobiles. There has been considerable cracking down on "smokers" among buses and trucks, and an abortive attempt to crack down on private auto smokers, dropped because of the difficulty of setting standards.

But smokers are not the main problem. If all vehicles were operating at reasonable efficiency, collectively they would still emit an enormous quantity of hydrocarbons. The district, the foundation, and a technical committee of the auto industry are all diligently working on the problem of exhaust controls. They report progress in investigating several different types of controls (including a catalytic converter developed by Eugene J. Houndry, inventor of the catalytic cracking process for gasoline), but success appears several years away.

When and if an efficient and realistically priced control device is achieved, the problem of enforcing its installation on 2-million-plus private automobiles and other vehicles is staggering.

• **Cut-down on auto**—Meanwhile, efforts are being made to get some of the cars off the road. People are being urged, without noticeable success, to form more car pools. And much thought is being given to developing a mass rapid transit system attractive enough to lure Angelinos away from their devotion to the private auto.

Besides control of pollutant emissions, other approaches are being studied. APCD, for instance, has a survey underway of wind currents in the basin, looking toward a system of industry zoning.

Given Mfg. Co. has proposed an "air sanitation system" to collect gases from industry and rubbish combustion, pipe them to the mountains for discharge above the inversion level.

General Electric's Nobel-prize winning Dr. Irving Langmuir has proposed creating an artificial cloud about the combustion chamber on bad days, to hold off the sun's rays and inhibit the photo-oxidation process.

Dr. Irving P. Krick, of the American Institute of Aerological Research, has reported investigations of "smog-seeding"—use of a catalyst in smog much as silver iodide is used to precipitate rain.

Meanwhile, there is cause for other communities to sit back and gloat over Los Angeles' plight. The Los Angeles phenomenon is a phenomenon of our particular motorized industrial society, and it is showing up all over the world.

At the National Air Pollution Symposium last April, Cal Tech plant physiologist Fritis W. Went presented the results of a study showing that smog damage to plants—caused by oxidized hydrocarbons—has been found in such scattered metropolitan areas as San Francisco, New York, Baltimore, London, Copenhagen, Paris, Algiers, Sao Paulo, Bogota. Pointing out that smog damage didn't exist in Paris in 1952, but was extensive in 1954, Went ascribed this to an increase in gasoline consumption, particularly of higher octanes. He gave a rough calculation of the point when damage can be expected to appear: when gasoline sales in an area pass 12 tons per sq mi per day.

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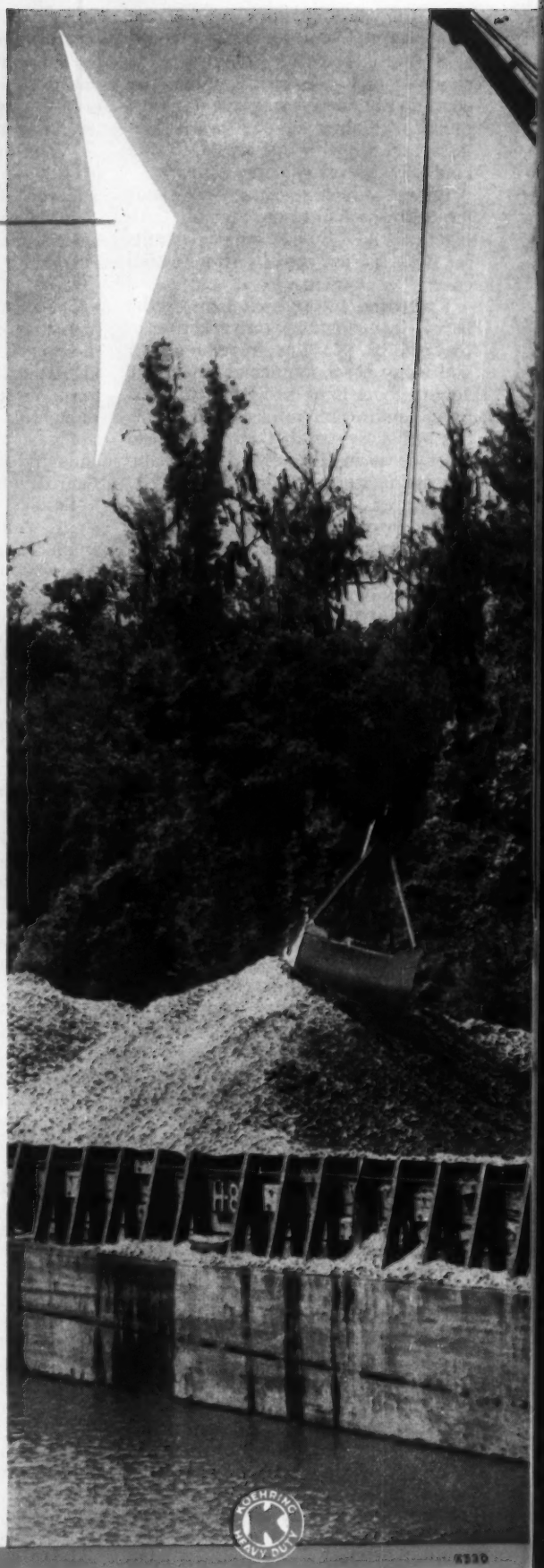
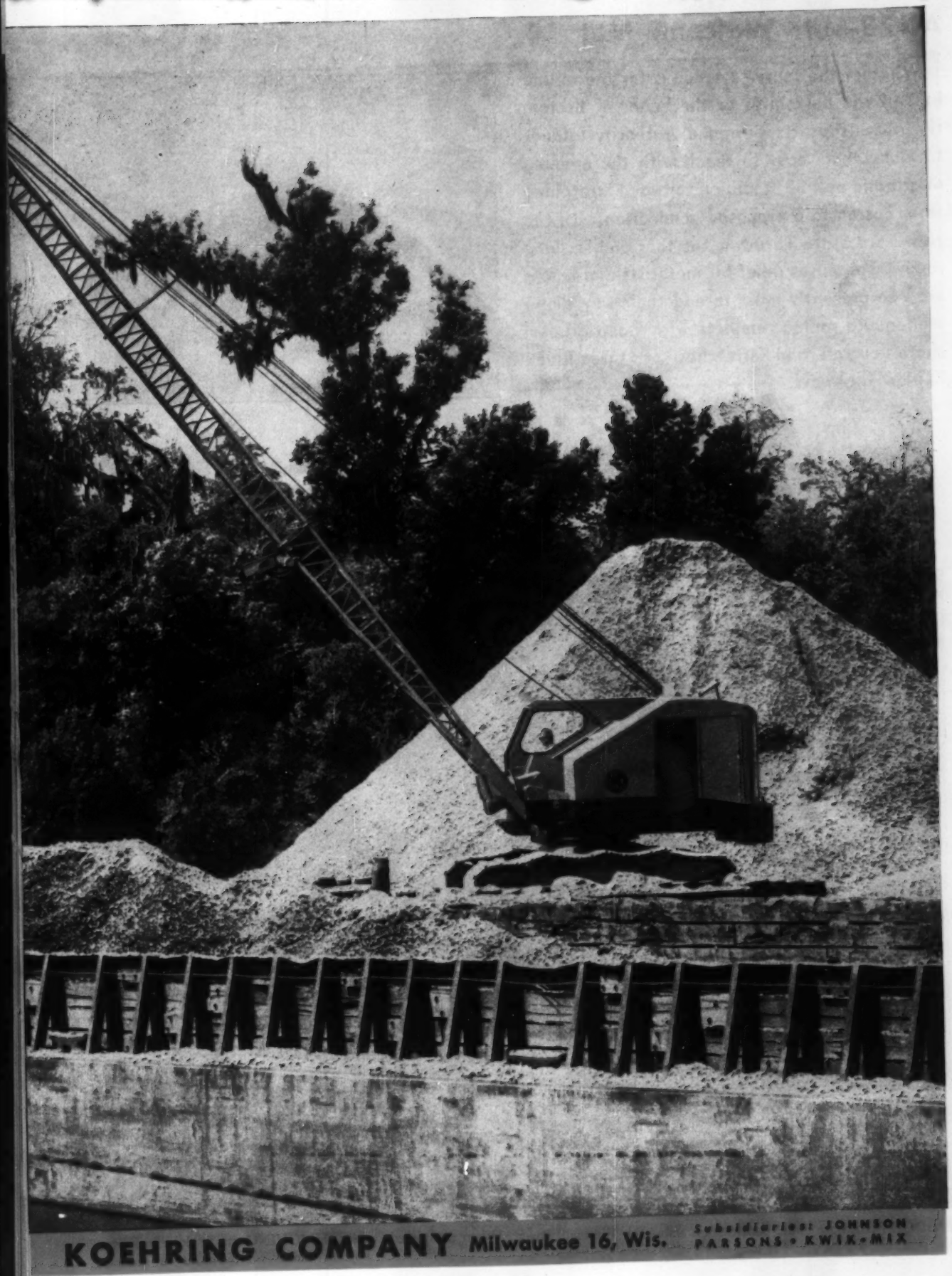
205 ON RUBBER	½-Yd.	30,000 lbs.	25-foot boom at 12-ft. radius	?
304 CRAWLER	¾-Yd.	27,800 lbs.	35-foot boom at 12-ft. radius	?
304 ON RUBBER	¾-Yd.	50,000 lbs.	30-foot boom at 10-ft. radius	?
405 CRAWLER	1-Yd.	40,000 lbs.	40-foot boom at 12-ft. radius	?
605 CRAWLER	1½-Yds.	72,300 lbs.	50-foot boom at 12-ft. radius	?
1005 CRAWLER	2½-Yds.	159,000 lbs.	50-foot boom at 12-ft. radius	?

Figures available on request—ask your Koehring distributor to see them.




KOEHRING COMPANY Milwaukee 16, Wis.
Subsidiaries: JOHNSON
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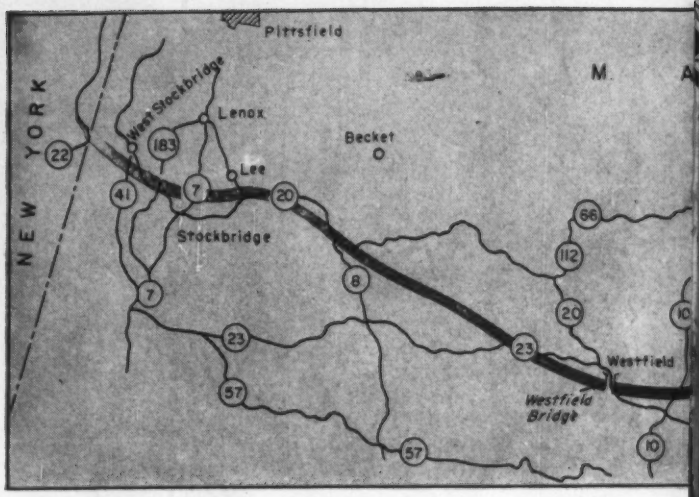
A 123-Mile Welcome Mat . . .

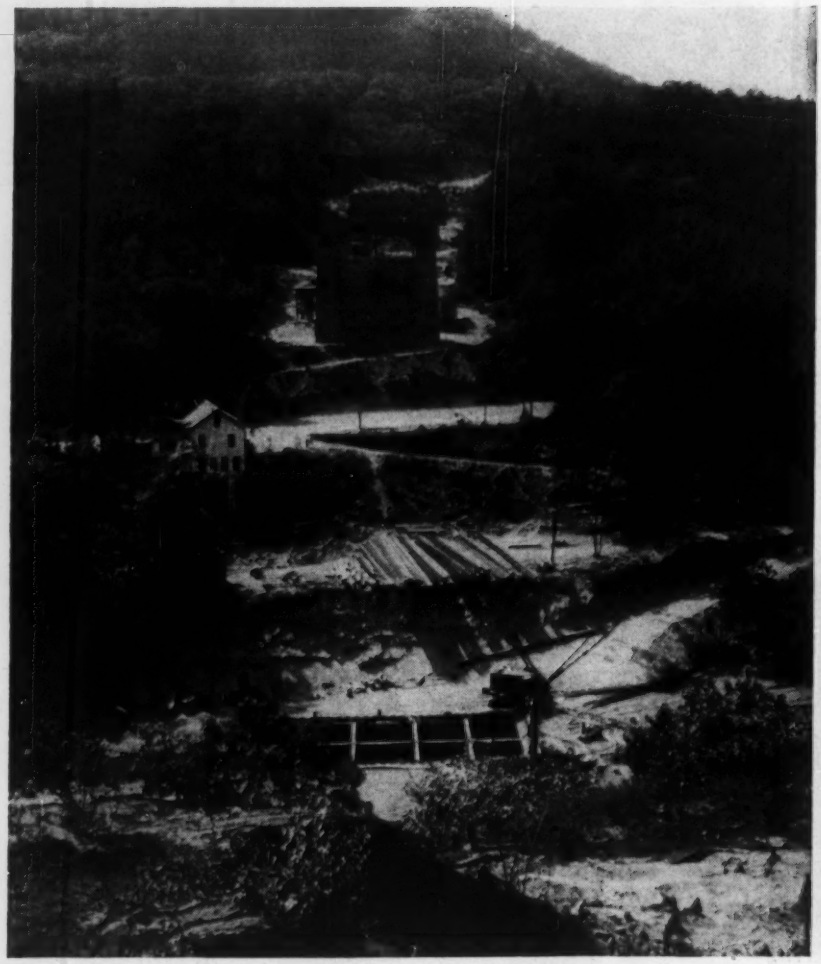
Whether the tourist's fancy is for the rolling hills of the Berkshires or the beans of Boston, the Massachusetts Turnpike Authority intends to make them easy to reach with the opening of a brand new $239 million tollway. Stretching from Boston to a proposed connection with the New York State Thruway, the four and six-lane roadway promises relief for motorists and truckers who presently must thread their way along inadequate routes complete with steep grades, sharp curves and stretches of three-laned "killer" highways.



Massachusetts Rolls Out

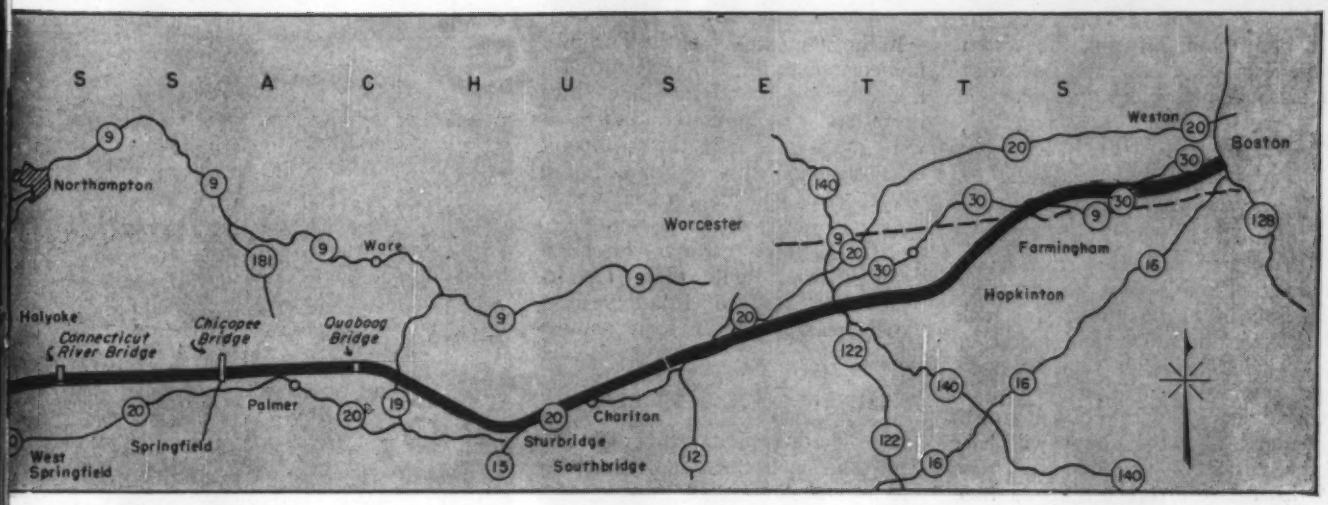
With the opening of the first bid on Dec. 14, 1954 (ENR Dec. 2, 1954, p. 26), the Massachusetts Turnpike Authority let out the clutch on construction of the Bay State's link with the toll road system of the eastern U. S.

Although the new road runs generally east-west, its eastern section will perform a useful function in moving traffic traveling north-south through the northern portion of the



BRIDGE PIERS are under construction across the Westfield River. When completed, the structure will be 1,464 ft long and 250 ft above the waterline.

EARTHMOVING can be done by loader-bottom dump combinations in sections.



the Red Carpet

Atlantic seaboard. The present system of directly-connecting state highways, turnpikes and parkways permits relatively uninterrupted travel from Baltimore to Portland—except for the 50-mi stretch through Massachusetts from the Connecticut line to near Boston. The Turnpike will close this.

The volume of traffic over the Baltimore-Portland route was considerable ten years ago, and with the opening of the New Jersey Turnpike it has grown enormously. When the Massachusetts facility is opened, a further increase—and consequently further justification for construction of this highway—can be expected.

But although a north-south traffic volume passing through Massachusetts is already established, the potential of the western part of the commonwealth has been untouched by comparison. Opening onto the New York State Thruway, the Turnpike will permit funneling of motor traffic into the state and thereby provide a fast, economical route to the port of Boston. Too, the tourist havens of the Berkshires have long been frequented by visitors from New York and Connecticut, but the lack of good roads has retarded use of the mountain playgrounds by residents of the Boston area. The Massachusetts Turnpike will open these areas to vacationers from the eastern part of the state and

Here, the Chicopee River, wet ground requires crawlers as pushers.

ROCK EXCAVATION is most common in the section passing through the western part of the state. Here, the western approach to the Westfield Bridge is blasted out.

Some Have it Easy, Some Not so Easy

will also aid in bringing the eastern shore resorts, such as Cape Cod, within reach of many more people.

• Engineering firms appointed

To determine the feasibility of the east-west route, the Turnpike Authority retained DeLeuw, Cather & Co. to make traffic studies. Just before completion of this phase of the project, the firm in turn retained Coverdale & Colpitts to review and report on its conclusions. The combined report revealed that, based on 1953 traffic volumes (with normal growth extrapolated), the highway will have recovered its cost by 1976. To arrive at this estimate, the firms used their own traffic counts and origin and destination surveys, previous traffic counts made by the State Department of Public Works on existing highways through the same general area, population maps and economic studies.

In December of 1952, six firms of consulting engineers were engaged, with specific sections of the Turnpike assigned to each for study, development and cost estimates. General consultants to the Authority were Howard, Needles, Tammen & Bergendoff.

The engineering studies and cost estimates for the 45.1-mi section from W. Stockbridge to W. Springfield were developed by Thomas Worcester, Inc. There is included in this section the 2½-mi Stockbridge By-Pass—already constructed under contract to the Department of Public Works.

The 15.1 miles eastward from W. Springfield to Palmer were the responsibility of Charles A. Maguire & Associates. The biggest part of this section had been previously examined by this firm as a second project of the Department of Public Works for a by-pass of Springfield. Almost all of this previous design was adapted to the Turnpike. Grading and drainage for a 6¼-mi portion of this Springfield by-pass together with the substructure for the Connecticut River Bridge, were completed by the Department of Public Works.

The 18.7-mi section between Palmer and the Sturbridge-Charlton line was studied by Charles T. Main, Inc., and similar work on a 25-mi section eastward to the Westborough-Hopkinton line was performed by Hayden, Harding & Buchanan. Work of the same type on the 19.4-mi easternmost section to Weston at Route 128 to the vicinity of Boston was performed by both Fay, Spofford & Thorndike and the Clarkeson Engineering Co.

In the 20-mi section of the Turnpike immediately to the west of Route 128, five different locations of line—three north and two south of Route 9—were investigated from the standpoint of construction costs, cost and amount of property aquisition, traffic potential, traffic distribution on Route 128 and the feasibility of future extension eastward from Route 128. The selected line north of Route 9 most closely realizes all the basic requirements.

• Designed for economy

The Turnpike is being constructed with sufficient traffic lanes to care for the volume of traffic estimated for revenue purposes. Except for the 12½ miles at the eastern end, the roadway will be four lanes wide. Between the interchange with Route 9 on the west side of Framingham and Route 128—the eastern terminal—the road will be six lanes wide and provisions are being made to permit widening further to the west as traffic growth dictates. All bridges between the Farmingham interchange westward to the Sturbridge interchange with Route 15—the feeder highway to Connecticut and metropolitan New York—are being constructed for the ultimate six-lane Turnpike.

Traffic lanes will be 12 ft wide and paved shoulders will be provided on each side of the roadways. The outside shoulder will be 10 ft in width—wide enough to park disabled cars—whereas the inner shoulder next to the high-speed lane will be but 4 ft wide to discourage this practice.

The two roadways of the Turnpike will be separated by a grassed median of variable width, consistent with safety, economy and terrain conditions. On long bridges and approaches, a 6-ft raised median will be installed. The same width, with the addition of inner shoulders about 4 ft wide, will be used in long deep cuts to reduce earthmoving costs, and in some of the more urban portions of the eastern section to reduce both construction and property aquisition costs. In these short lengths of highway, a double line of steel beam guardrail, 2 ft high and 18 in. wide, will be installed in the center of the median.

In general, however, the median will be 18 ft wide. Yet where permitted by physical conditions and encouraged by economic considerations, the two roadways will be more widely separated and placed at different elevations, with natural growth left in the dividing portion.

Interchanges will be the only points of Turnpike entry and exit. As with the New Jersey Turnpike, only the two terminal interchanges will be on the Turnpike itself. The twelve intermediate interchanges will be so constructed that toll collections will be made after a vehicle has left the highway, payment being made against toll tickets issued upon entry.

SOFT GLACIAL material in the east is

PEAT BOGS found in some areas must be removed and replaced by more stable

easily hauled and excavated by scrapers.

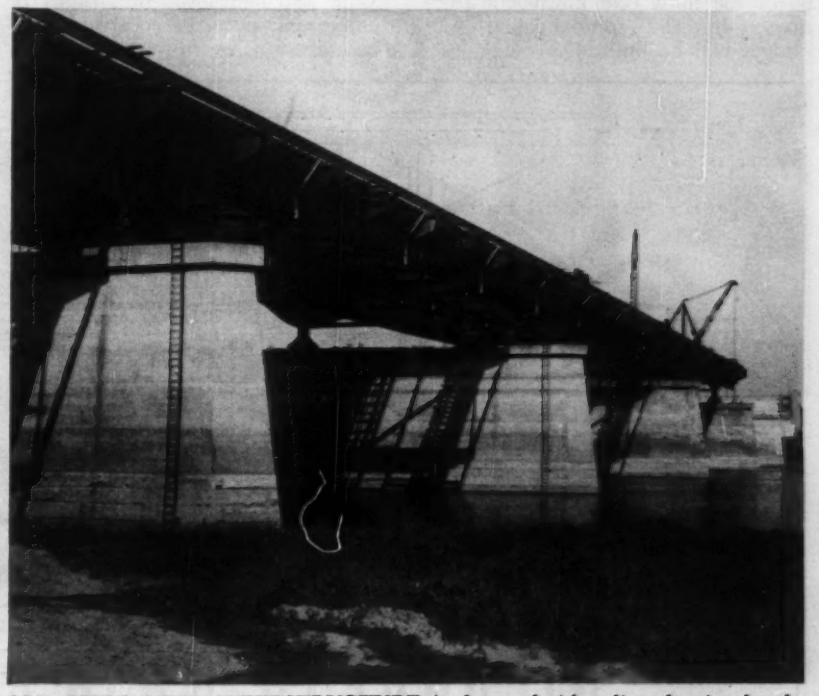
BOULDERS occurring in some glacial areas require shovel and truck combinations.

Design of the road uses a minimum horizontal curve radius of 5,000 ft wherever possible. But in mountainous and built-up areas where sharper curves may be required for economy, a 3,000 ft minimum was established. All curves will be super-elevated when necessary for safety and comfort at the design speed of 70 mph.

Relatively flat grades are being used throughout to assure speed and operational economy of commercial vehicles. Generally, the maximum grade is 3% but in the Berkshire section a maximum upgrade of 3½% and a maximum downgrade of 4% are used to avoid excessive costs. Further, in the central portion of the Turnpike, relatively short stretches at 3½% are permitted in rural areas. To assure adequate sight distances for the design speed, long vertical curves are incorporated at points of change in grade.

The design and construction of pavement and structures assures that the heaviest present highway loadings can be accommodated, with provisions

materials. Blasting is used in some spots but draglining is most common.



OLD PIERS, NEW SUPERSTRUCTURE is the result of earlier planning by the state department of public works. This is the bridge across the Connecticut River.

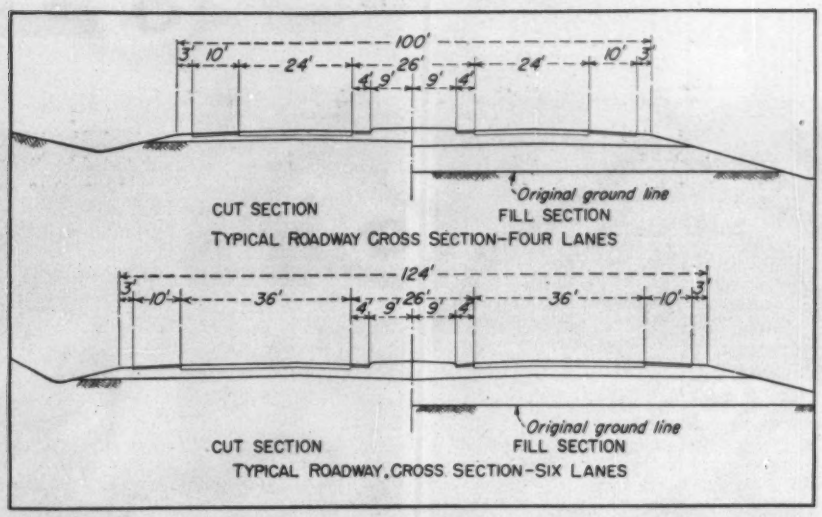
. . . Turnpike

made for any reasonable future increase.

Structures carrying the Turnpike are designed for an H20-S16 loading and structures carrying existing highways and local roads over the roadways are designed for the type of traffic anticipated. Foundations for structures have presented only normal design and construction problems since the sub structures of the majority of bridges are founded on easily reached compacted sand or gravel or on bedrock. Certain sections, notably at the interchange with Route 15 and along the Connecticut River, are, however, in peaty areas, and provisions is made for the use of piles where compact materials occur at such distance below ground as to make them more economical then spread footings.

All bridges carrying the Turnpike are deck types and are of simple functional design. When possible, the two roadways will be carried on individual structures rather than on a single, excessively wide unit.

Bridges carrying existing roads over the twin roadways or carrying the Turnpike over major state highways will be of open-end span construction with small abutments at the top of the embankment. This is to avoid the impression of constriction given the driver at high speeds when the wall of the abutment is within a few feet of his lane. Structures over minor state highways and local roads will be of the most economical construction. In all, approximately 170 bridges will be built.



The bridges over the Quaboag, Chicopee and Connecticut rivers will be relatively long, but no unusual engineering problems are presented. As much as possible, primary members are to be girders and beams.

Of all the structures on the tollway the bridge across the Westfield River is probably the most impressive. Crossing over Route 20, the river and the Boston and Albany Railroad, it is a high-level steel structure with a reinforced concrete deck. Standing 250 ft above the river and supported on seven piers and two abutments, the bridge consists of six independent units totaling in length 1,464 ft. The tallest of the piers is, like the others, constructed of reinforced concrete, but stands on steel H-piles.

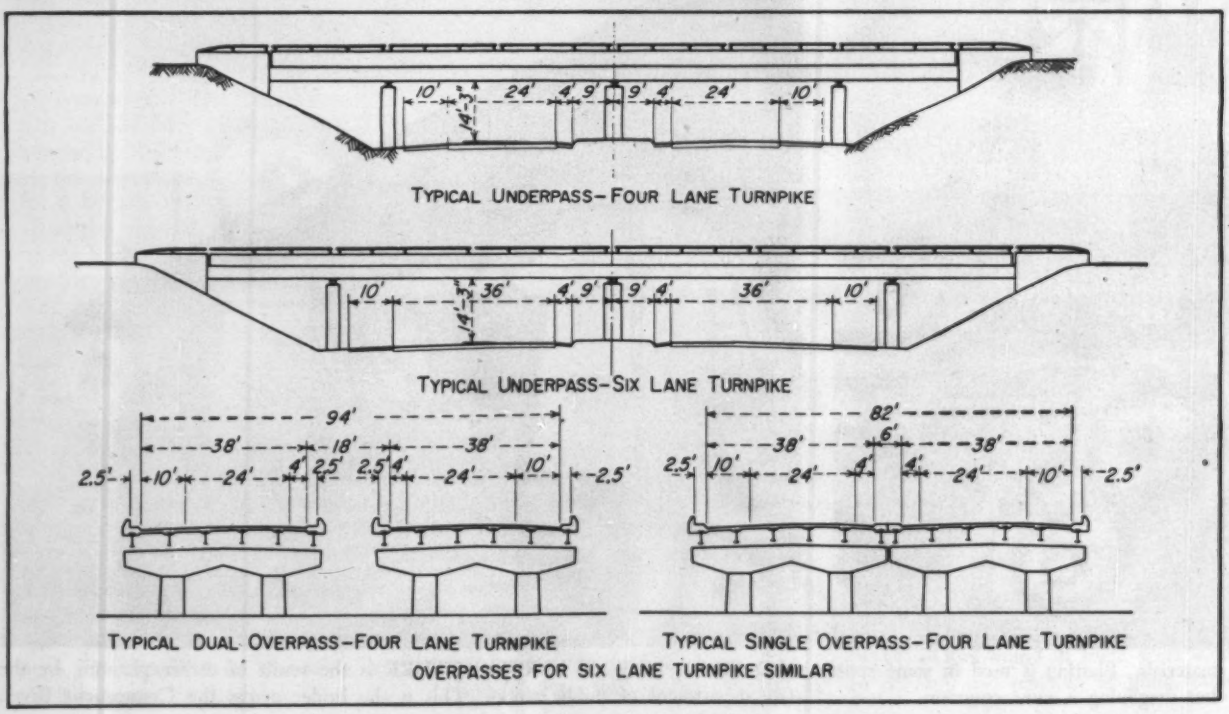
The pavement over the length of the Turnpike is to be constructed on a base of frost-free, free-draining gravel placed in at least two layers to about 14 in. On top of this will be a macadam base consisting of a sandbound course and a penetration course—each 2½ in. thick. This will be finished off with two courses of hot-mixed bituminous concrete 3 in. thick. Paving operations are not scheduled to begin until the summer of 1956.

Now a Contractor's Job

In the far west, between West Stockbridge and Lee, Perini & Sons. Inc. are gouging the highway out of shallow, stony silts and clays which range in depth from 4 to 40 ft. Wagon drills, blasters, shovels and rear dumps are teaming to remove the limestone bedrock in the deeper cuts while scrapers are the workhorses on fills.

Similar techniques are called for in

(Continued on page 44)



Armco Guardrail Takes Curves Smoothly

Sharp bends or gradual curves—it makes no difference with Armco FLEX-BEAM Guardrail. Sections can be shop-curved to fit any radius from 20 to 150 feet.

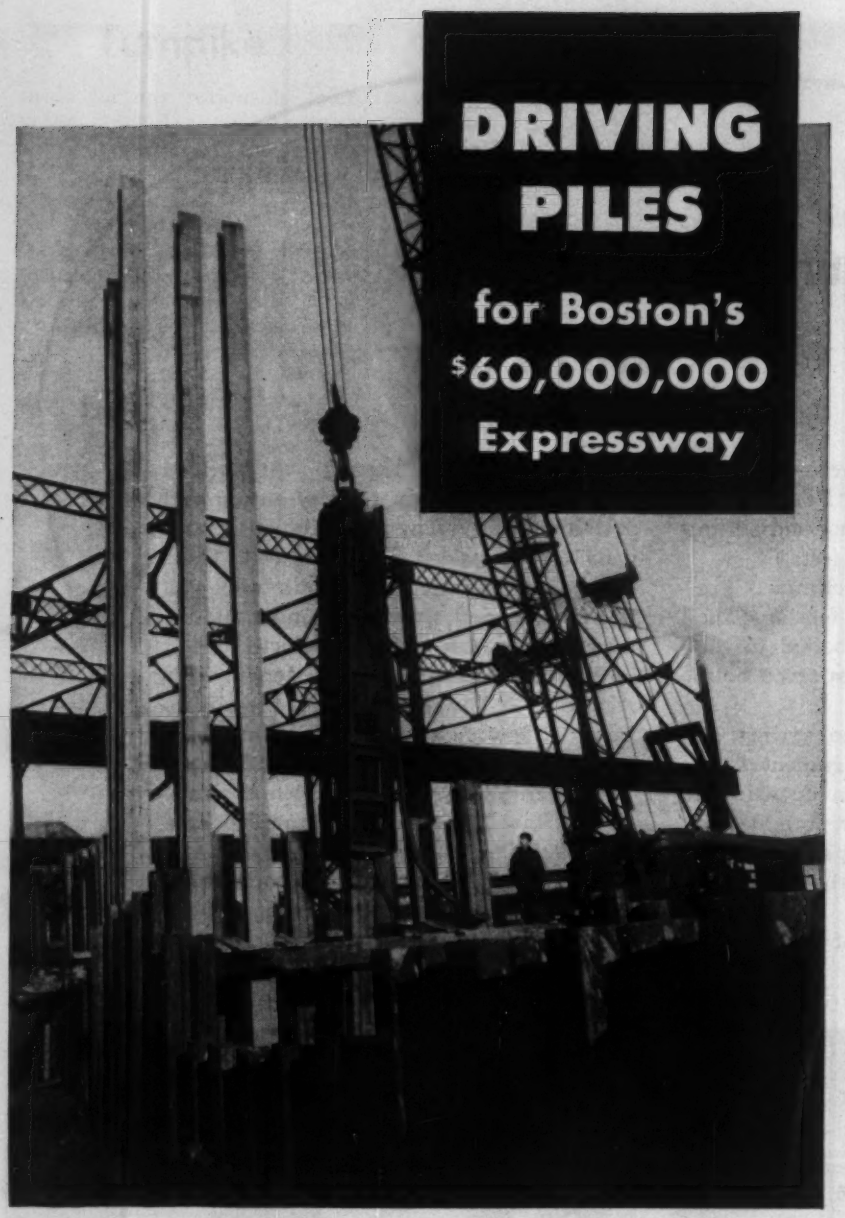
No special posts or attachments are needed because there is no tension. The 13-foot sections are simply bolted to the posts and the job is done. Just seven bolts make each splice.

And because there are no springs or turnbuckles, posts stay in alignment without costly maintenance. An occasional painting, to keep the surface bright and reflective is about the only upkeep needed. Costs are low to start with; stay low through the years.

The high beam strength of FLEX-BEAM Guardrail extends through the spliced joints. This means the force of any impact is shared by adjoining posts. Out-of-control vehicles are guided along the rail. There is no danger of "pocketing" at a weak spot or cracking and splintering under the extreme shock of a colliding vehicle.

Wherever guardrail is needed, specify Armco FLEX-BEAM and get all the advantages of low first cost, minimum maintenance, high visibility and high resistance to impact. Write us for complete information. Armco Drainage & Metal Products, Inc., 4925 Curtis Street, Middletown, Ohio. Subsidiary of Armco Steel Corporation. In Canada: write Guelph, Ontario. Export: The Armco International Corporation.

ARMCO FLEX-BEAM GUARDRAIL



This McKiernan-Terry Type S8 Single-Acting Pile Hammer is shown driving 89-lb. H-piles for piers of the double-deck high-level bridge over the Charles River for this outstanding traffic artery.

Here, as in many thousands of foundation jobs . . . large and small . . . for bridges, dams, buildings, piers, highways, etc. . . . contractors use McKiernan-Terry Single-Acting and Double-Acting Pile Hammers and Double-Acting Pile Extractors to assure speedy and economical work.

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. . . Turnpike

the Lee-to-Becket stretch where Lizza & Sons and the Elmhurst Contracting Co., Inc. are working through limestone and quartzite capped by shallow layers of stony clays. However, in this section operations are periodically eased through gravel deposits extending from 20 to 100 ft deep.

From Becket to the Westfield River Bridge, S. J. Groves and Son are blasting out terraces from the gneiss and schist mountainside on which to pose the roadway. In this 13-mi spread can be found some of the deepest rock cuts and fills of the entire route.

Eastward from the Westfield River Bridge to the Chicopee River, Lane Construction, Henley - Lundgren, Grandview Construction, Bayer & Mingola and L. G. DeFelice & Son are encountering slightly easier going —at least as far as solid rock excavation is concerned. Earthmoving operations are fairly typical of those ordinarily used in areas of glacial deposits, with the sandy clays and gravels easily moved by scrapers and loaders. But some rock ledging and boulders areas do occur, and occasionally where groundwater is present near the surface crawlers prove handy in nudging the haul units out of the muck.

In the remaining 60 mi to the east, soil conditions are nearly homogenous —sand and gravel interspersed with stones and boulders lie in depths from 5 to 100 ft with bedrock uniformly gneiss or schist. Engaged in what is primarily a scraper operation are the construction companies of Grandview, Berlanti, Gilbane, Orlando, DeFelice, Henley-Lundgreen, Clark-Farrell- Rodgers, Nello L. Teer, Langenfelder, DeMatteo, J. F. White-Consolidated and Perini.

When all of the grading operations are finished early next year, the contractor teams will have moved more than 28½ million cu yd of earth and nearly 6½ million cu yd of rock. In addition, 15½ million cu yd of borrow will have been torn out of the surrounding countryside.

Weatherwise, the early phases of the earthmoving operation were a contractor's dream. With the eastern part of the U. S. experiencing one of the hottest, clearest and driest summers on record; the yardages piled up. Then in late August, came the great hurricane rains. The flood that followed did not do much damage to the Turnpike itself. As a matter of fact, it has been credited with reducing the severity of flood damage in many areas since the wide, high fills served as huge dikes. Further, contractor mustered their men and equipment to

(Continued on page 96)

A road earning money? Absolutely! Every road earns money in the form of gas taxes and license fees paid by drivers using it. The more vehicle miles of traffic a road handles the more money it earns.

The road pictured is U.S. 5 south of Hartford, Conn. It carries a daily average of 40,000 vehicles, many of them commercial. Here's how the earnings of this concrete road are computed:

Vehicles traveling this road per day	40,000
Times average vehicle tax per mile in Conn.	$ .0058
Equals earnings per day per mile	$232.00
Times number of days a year	365
Equals annual earnings per mile	$84,680
Minus the annual cost to build and maintain such a road during its lifetime	$10,000
Equals annual profit earned per mile	$74,680

Similar analyses elsewhere show that concrete roads earn the most "profit." That's because they attract the most traffic and have the longest life.

For example, concrete carries the load on 92% of the pavement of the 25 most heavily traveled rural road sections in America. And official studies reveal that concrete has at least twice the life expectancy of the next most commonly built pavement.

Concrete roads usually earn *more* than they cost to build and maintain. The "profit" pays for additional miles of new highways. In contrast, other commonly built pavements have such a relatively short life and require such frequent and expensive maintenance that they earn *less* than they cost to build and maintain. Thus they drain an increasing amount from available funds for maintenance, leaving a decreasing amount for building critically needed new mileage.

Highway users expect engineers and public officials to invest their money in roads paying the best dividends. That means paving all main roads with concrete, the self-supporting, profit-making pavement.

For more information about designing and constructing low-annual-cost, high-earning-capacity concrete highways, write today for free literature, which is distributed only in the United States and Canada.

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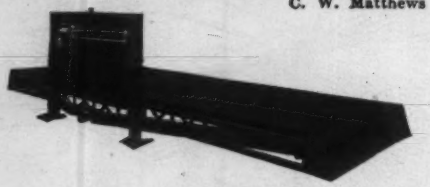
Another Contractor Specifies Portable Truck THURMAN SCALES

A 20-ton Thurman Portable Truck Scale owned by C. W. Matthews Contracting Co., Marietta, Georgia.



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- DEPENDABLE
- PORTABLE
- PROVEN

Day-after-day more contractors are selecting THURMAN Portable Truck Scales. Hundreds of contractors in all parts of the country like the truly portable features of this scale as well as the versatility. For instance, the C. W. Matthews Contracting Co., as illustrated above, has utilized their THURMAN Portable Truck Scale in a permanent type installation. Yet, at a future date, this scale may be easily moved to a different site.

Then too, contractors like the dependable service that they get from THURMAN Portable Truck Scales. Time-proven in all types of installations, Thurman Portable Truck Scales provide a new concept in portable weighing. For detailed information on these scales, as well as prices and delivery, write on your letterhead for Bulletin 601.

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aid surrounding communities in clearing up mud and debris.

Where the Turnpike suffered most was from the destruction of local and state highways as weel as railroads. Material shipments will be delayed and opening of the road may have to be postponed several months beyond the scheduled November, 1956 opening date.

The Massachusetts Turnpike Authority, under whose supervision the roadway is being constructed, consists of W. F. Callahan, chairman; B. J. Grout, vice chairman; and J. R. Kewer, secretary. Chief engineer of the Authority is P. H. Kittfield.

Aviation Expert Supports Plan for Elevated Heliport

New York City's Department of Marine and Aviation this week made public a report by Alexander P. De Seversky that strongly favors the department's plan for an elevated heliport atop a proposed two-story freight terminal building (ENR Sept. 22, p. 22).

The opinions of the aviation expert provide new ammunition in the battle between the city and the Port of New York Authority over design. The bi-state agency contends that the solution to the city's helicopter problem should be a ground-level structure at the foot of 30th St. on the Hudson River and beside New York's West Side elevated highway.

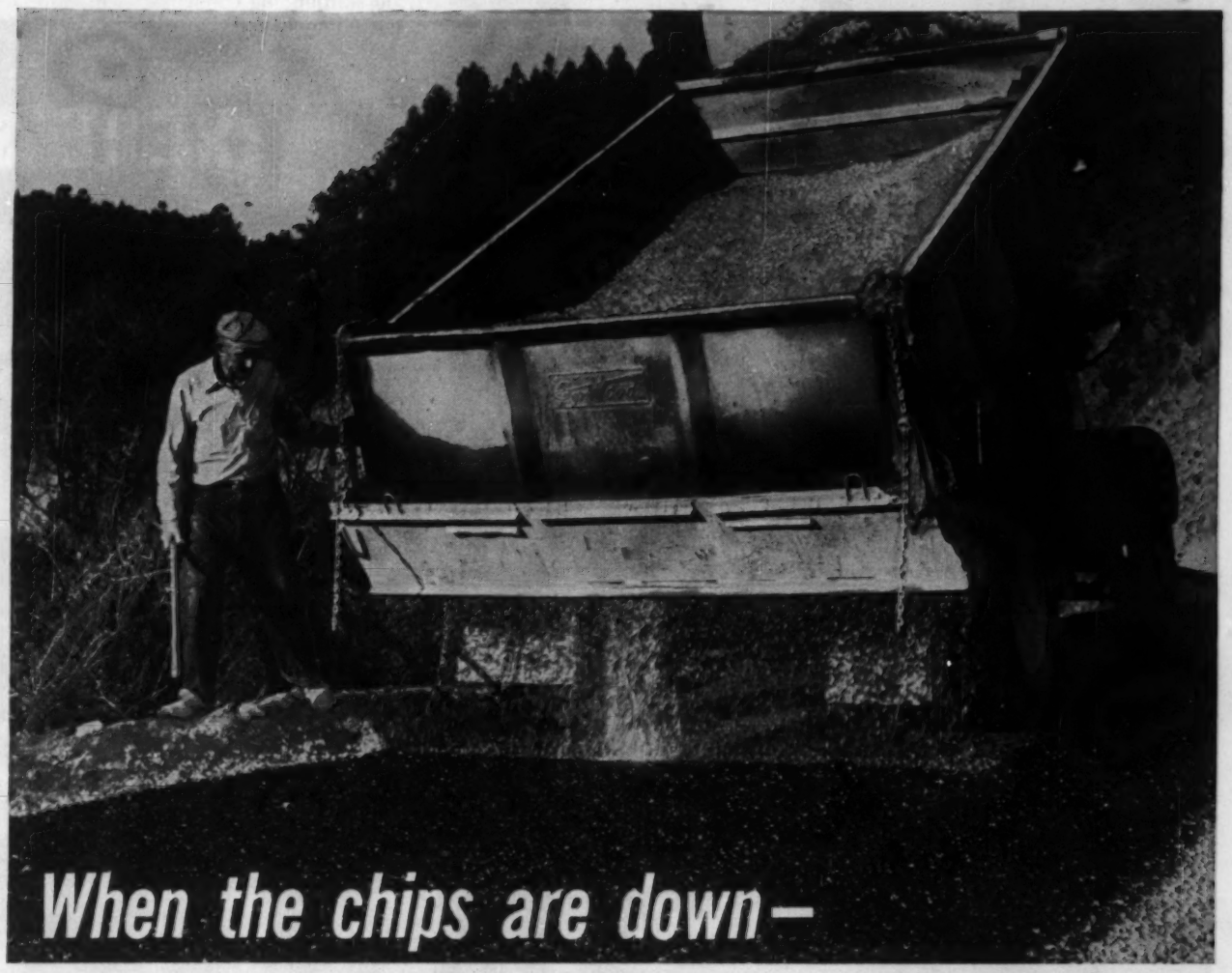
In brief, the criticisms of the Authority plan were that it cuts off surface area valuable for traffic; the site it too close to an existing elevated highway for complete safety since the structure could create tricky air currents; and it would not adequately handle transfer and flow of cargo. In another comment the aeronautical consultant added that such a ground-level structure does not really utilize the unique capabilities of the helicopter for vertical takeoff and landing.

Engineers Turn Down Scheme To Reduce John Day Storage

The Army Board of Engineers for Rivers and Harbors has rejected a proposal to lower John Day Dam crest from 292 to 265 ft and reduce storage from 2,000,000 to 500,000 acre ft.

The plan was submitted by the Portland, Ore., District, Corps of Engineers, which now has been ordered to make further field studies to find alternate upstream flood control storage.

The project, authorized after the 1948 Columbia River flood disaster, is expected to cost $320 million and provide an ultimate capacity of 1,530,000 kw (ENR, Apr. 14, p. 23).



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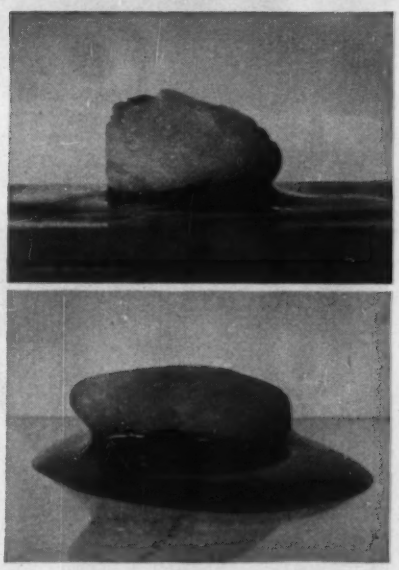
Complete data and specifications on Bitumuls Surface Treatments and Armorcoats are available from our nearest office.



These laboratory photographs show the superior ability of Bitumuls to "wick-up" on the sides of cover chips. Top is a stone put down in an asphalt cut-back; lower, stone put down in Bitumuls.

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Courtesy California Division of Highways

WHERE THE FLEX-PLANE BRIDGE and ELEVATED HIGHWAY MECHANICAL FINISHER SHINES

To alleviate traffic flow through congested areas, highway engineers are resorting more and more to the elevated roadway. Moving traffic up in the air permits additional facilities with a minimum of disturbance to existing roadways, businesses, etc.

Building an elevated highway is something different than running a roadway along the ground. It requires a special knowledge and special machinery.

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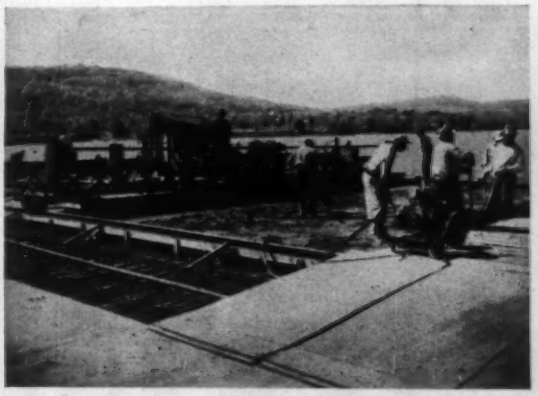
The Flex-Plane Elevated Highway machine has long been a favorite with leading eastern construction firms who designed and built the first large elevated systems. The famed Tri-Borough Bridge, the Henry Hudson Parkway, the elevated sections of the New Jersey Turnpike and many of Manhattan's and Long Island's thruways have been finished with Flex-Plane equipment. **In fact**—No other company has the experience of Flex-Plane in Engineering and Building Elevated Highway Finishing Machines.

Remember the name Flex-Plane when next you're in the market for finishing machines —for Flex-Plane is the nation's leading producer of mechanized finishing equipment.



Flex-Plane Mechanical Elevated Highway and Bridge Finisher working elevated approaches and deck of the Tappan Zee crossing of the Hudson River on the New York Thru-way.

Get your copy of this BRIDGE and ELEVATED HIGHWAY FINISHING booklet. It explains how others have achieved perfect finishing on all types of elevated structures.

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$10 million, 500,000 sq ft home office building to house its central activities on a 268 acre tract five miles from Hartford, a major insurance company decided to check all angles of the new structure, and . . .

They Built This →

Full scale mock-up, 60 x 72 ft, two stories high, so both the engineering and architectural staff and the people who would use the new building could visualize what it would look like.

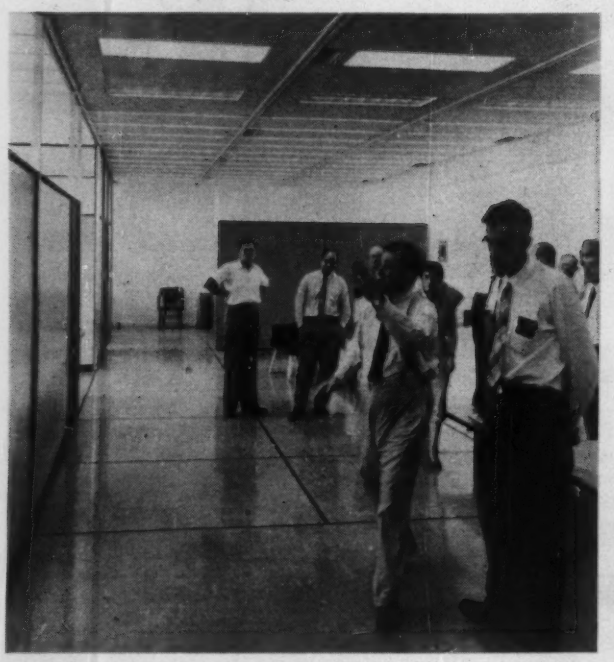
Mock-Up Saves Mistakes—and Money

Bruce Hayden
Secretary,
Connecticut General Life Insurance Co.
Building Committee

When the old-fashioned cook got the batter ready to put in the oven, she generally baked a small try cake, to make sure that the color and texture of the finished product were exactly what she wanted them to be. Connecticut General Life Insurance has adopted the try cake theory in erecting a full-scale model or mock-up, two stories high, of a section of its new home office building in Bloomfield, Connecticut.

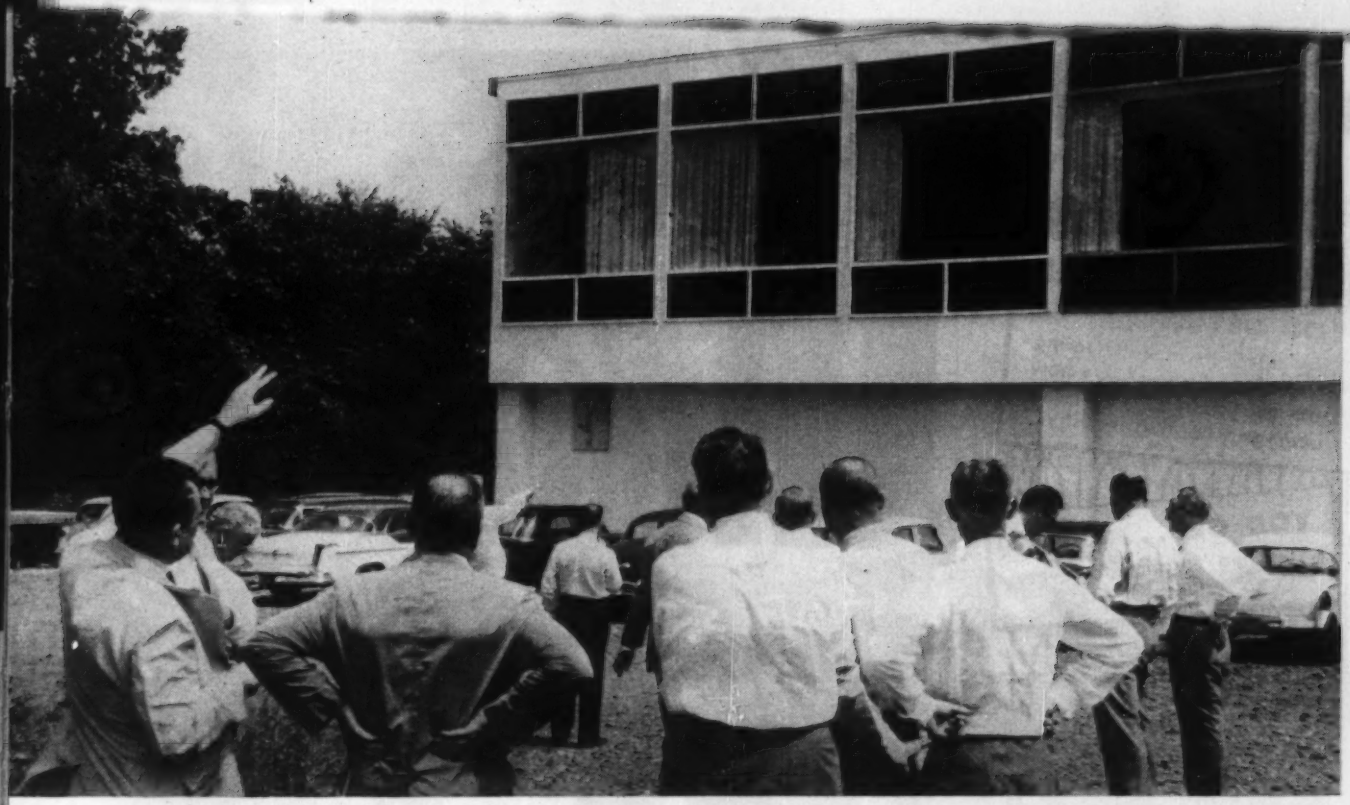
Early in the building program Frazar Wilde, who is both president of the Connecticut General and chairman of its building committee, decided that because of the many new conceptions and new ideas embodied in the thinking of the company and its architects, full-scale experimentation was called for.

His initial suggestion was that interior finishes, lighting schemes, floors, furniture arrangements, partitioning systems, ceiling materials, wall finishes, and as many other physical components as possible be tried out experimentally in the company's present building in Hartford. This idea was abandoned when it became apparent that the present building was so overcrowded that no suitable space was available for the purpose; and, second, that the physical characteristics of the present building were so different from those of the contemplated new structure as to make the



FLOOR LAYOUT in mock-up is studied by committee. Tape on floor outlines standard 6-ft module of projected structure, ceiling runners permit easy movement of office divider panels.

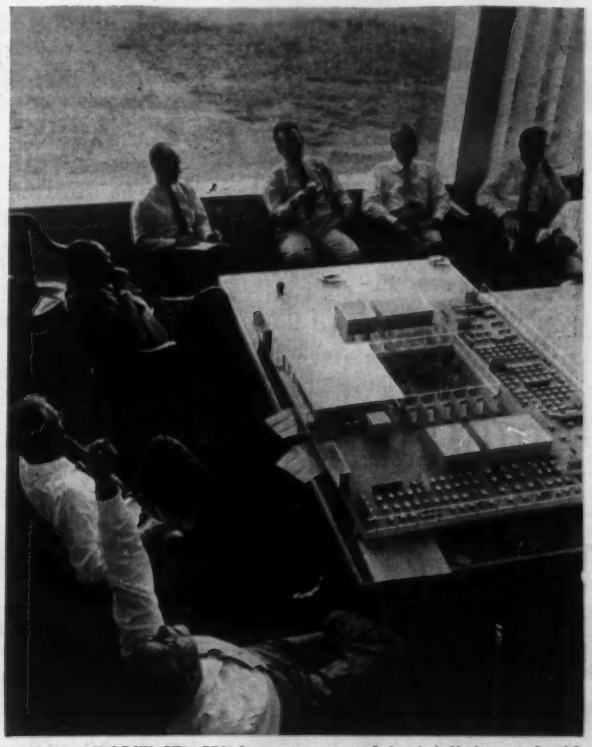
PANEL, STRIP OR BLOCK is the choice in lighting in this section of mockup. Lighting engineer checks results of lighting schemes and ceiling materials, as shown by light meter.



test of isolated components almost impossible of evaluation. Skidmore, Owings & Merrill, the company's architects, advanced the suggestion that Connecticut General use some of its 268 acres at the new building site for the construction of a full-sized mock-up section. Turner Construction Company, the third member of the owner-architect-builder planning team, concurred in the suggestion.

• **Plans** — Accordingly, plans were drawn up for a very simple, temporary structure, with only such heat and mechanical services as would be necessary to make the building usable year-round. It was decided that the structure would be two stories in height

HOW WOULD THIS LOOK?—Frazar Wilde, insurance company president, tries out new type floor covering, while design committee looks on with critical eyes. Different sectors have varying floor designs.



THINK ABOUT IT—With cutaway model of full future building before them, committee members sit in mockup office to talk over results and opinions. Mockup is exactly equivalent to small section of new structure.

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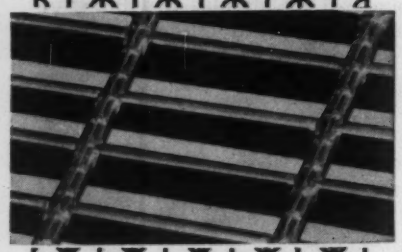

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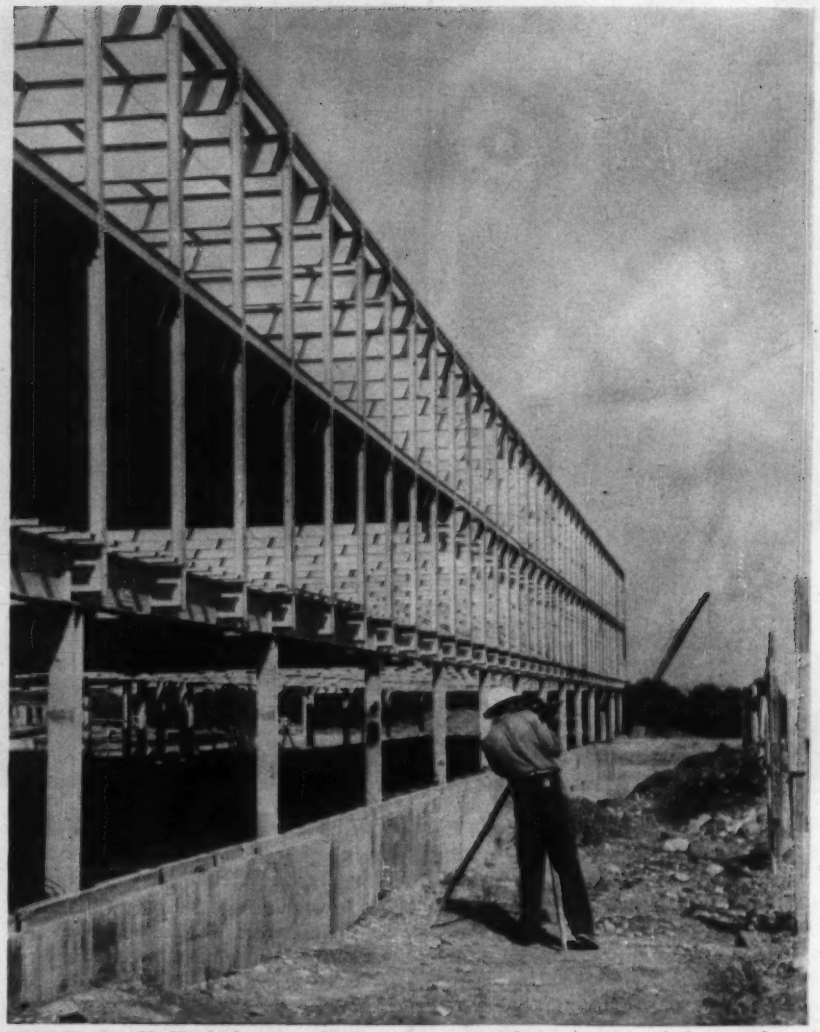


UNDER WAY—With design preliminaries over, actual construction of the new home office got under way. Main building, here, will be 324 x 468 ft, comprising three stories and a basement, and will be connected by a bridge to a 4-story-and-penthouse wing, 72 x 216 ft.

and 60x72 feet in dimension.

The size was arrived at since it represented exactly a typical working section of the proposed new building; the two-story feature was required because the typical space the company is most interested in will occur on the second and third levels of the three-story and basement main building adjoining a four-story administrative wing.

Since the walls of the main building will be largely of glass, the 72-foot east and west walls of the mock-up are of the same ⅜ in heat-absorbent glass. The main building will be of clear span construction, which meant that the temporary building had to be column-free, if the test area were to serve its purpose.

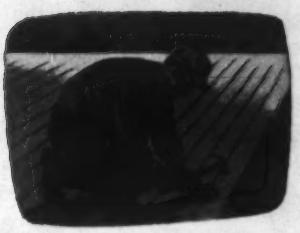
Clear span in the main building will, of course, be attained by the steel frame design. Such design would be prohibitively expensive for a temporary structure to be demolished before the new building were finished. The architects and builders, however, devised a method of suspending the frame of the plywood mock-up from three steel 72-foot beams, obtaining the necessary clear span interior relatively economically.

• **Lighting is key**—None of the three members of the building team knew exactly what was going to be tried out in the mock-up when the basic structure itself was begun. Tests of furniture and partitions and of the effect of the green-tinted glass on color schemes, both of interior finishes and furnishings, were clearly indicated from the beginning. So were tests of the various floor coverings under consideration and of various types of lighting.

As it turned out, the first and most important test was that of lighting.

As the architects developed their design conception, they devised a completely new open baffle, bare fluorescent tube ceiling system, which on paper seemed to have real merit

(Continued on page 54)



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Here is a section of the "Miracle Mile" Arcade located in Monroeville, Pa. It is the 10th Casto Shopping Center with Tectum Roof Decking—a total of nearly two million square feet. Developed by Don M. Casto organization of Columbus. Ohio. Architect: C. Melvin Frank, Columbus, Ohio.

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from the standpoint of efficiency and pleasant lighting, good acoustics, and simplicity of maintenance. A feature of the ceiling, however, consisted of leaving exposed behind it all of the steel beams, the sub-floor overhead, sprinkler pipes, air conditioning ducts, electrical raceways, and all of the mechanical services that are usually hidden behind a dropped ceiling.

There was serious doubt in many minds as to whether the design which looked so good on paper would prove pleasant in reality, or whether, because of the exposure of so much of the "innards" of the building, it would look merely as if the company had run out of money and had been unable to finish the structure.

Another principle on which there was serious reservation concerned the exposure of bare tubes as the principal means of lighting.

Consultation with Syska & Hennessy, consulting engineers for the project, and with lighting engineers representing three of the major electrical manufacturers indicated a wide divergence of opinion as to whether bare tube fluorescent lighting could be made satisfactory by reducing tube brightness.

• **Test proves out**—The obvious thing to do was to mock up a section of the proposed ceiling, complete with simulation of the ducts, sprinkler heads, and other structural elements that would be seen through it, and compare it with a number of other possible ceiling solutions which were likewise mocked up. This was done, and all of the experts were called in for a series of discussions and critical evaluations of the comparative ceilings. The sessions not only satisfied almost everyone as to the basic quality of the baffle ceiling, but served the further purpose of enabling several improvements to be made before the ceiling was actually put into production.

Certain things that appeared to be good on paper were proven otherwise. One suggested modification in the basic ceiling system would have separated the baffles and acoustical material from the electrical installation. Paper analysis of the separate systems as against the system combining the two indicated that for a number of reasons installation of the dual system would be simpler and cheaper.

We tried out a section however, and found that the separation not only contributed no saving but resulted in an increase in the cost, as well as harming the finished appearance. We were disappointed in this instance, in that an estimated 50-cents-a-foot saving turned out to be a 10-cents-a-foot

(*Continued on page 56*)

How molten metal helps

FOAMGLAS®

the cellular, stay-dry insulation

"We licked our condensation problem because FOAMGLAS insulation stays dry in 64% humidity!"

states Donald Purrington, Supt. of Engineering, William Skinner & Sons, Holyoke, Mass.

Freedom from condensation is vital to quality control in the Holyoke, Massachusetts mill of William Skinner and Sons . . . home of world-famous Skinner silks and satins. The constant efficiency of *stay-dry* FOAMGLAS roof and wall insulation helped lick their condensation problem.

Mr. Donald Purrington, superintendent of engineering at the Holyoke mill relates: "The everchanging New England weather and high inside humidities made condensation a serious problem. That problem doesn't exist in our new FOAMGLAS insulated mill, built in 1948.

"Seven years' service has proved to us that FOAMGLAS stays dry for constant insulating efficiency—despite the 64% humidity we must hold for best loom operation. We get precise temperature-humidity control needed to prevent condensation, and have had no insulation replacement."

Mr. Purrington concludes: "In a high moisture situation like ours, it would be a definite mistake to use an insulation with less than the fully moisture-proof quality of FOAMGLAS!"

Take a tip from Skinner! Solve *your* insulating problems with FOAMGLAS, the cellular glass insulation that *stays dry* to give you long-lasting insulating efficiency. It's strong, fireproof and rot-proof, too. Send today for a sample and our latest literature describing the use of FOAMGLAS to insulate: (1) roofs, ceilings, walls and floors; (2) cold storage spaces; or (3) piping, tanks and other equipment. Indicate your specific interest.

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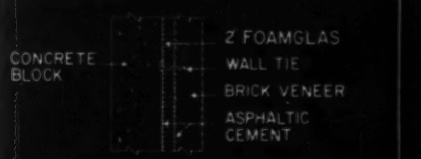
Mr. Purrington is shown on the FOAMGLAS insulated roof of Skinner's Holyoke Mill. He reports: "The unusually high strength of FOAMGLAS eliminated all possibility of damage from roof traffic. Its effectiveness has exceeded our expectations."
Engineers: Lockwood Greene Engineers, Inc., Boston, Mass.

TYPICAL ROOF SECTION



TYPICAL COREWALL SECTION

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Robertson Galbestos has the greatest resistance to weather and corrosion of any protected steel roofing or siding obtainable anywhere. This position of broad superiority is made possible by a unique manufacturing process exclusive with H. H. Robertson Company.

First, the steel sheet is pickled . . . then given a coating of molten zinc. Asbestos felt is then pressed on so that as the molten metal hardens in cooling it grips the felt fibers in absolute bond. The asbestos is then impregnated with a special asphaltic compound and, finally, given a tough weatherproof coating. Galbestos can be furnished flat or in the 3 well-known corrugations: Standard, Mansard, and V-Beam. The resultant material is so durable, it may be sheared, bent, rolled, crimped and riveted in the field as easily as ordinary unprotected steel. It will withstand the greatest possible extremes in weather temperatures without deterioration, and will actually retard fire better than naked steel. For an industrial roofing or siding that requires no maintenance under the most severe corrosive conditions, specify Galbestos.

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increase. We considered it fortunate, however, that we found out about it before ordering some 350,000 square feet of ceiling.

• **Partitions, furniture**—Experiments have been conducted with a newly designed and simple type of movable partitioning. Here again, the only way to evaluate the effectiveness and the appearance of the new system was to make some partitions up and try them out. Results from the appearance standpoint proved highly acceptable; some questions of an engineering nature have arisen and the matter is currently under study. The objective, of course, is to get something that looks as well as it works and vice versa.

Selection and layout of furniture and equipment are undergoing tests. The company and its architects felt that the color, design, and detailing of all equipment should be studied in relation to its function and appearance in the new structure.

Some surprising inclusions have resulted that have ended in space savings through reduction in size of most of the proposed private offices, and, at the same time, an increase in their efficiency. Proper furnishing, and the possibilities of its more efficient arrangement, taken in conjunction with the newly designed partitioning, led to the adoption of a standard 144 square foot office. Earlier the Company had expected to need 180 to 200 feet for a suitable standard office.

Prospective suppliers of materials were enthusiastic about the mock-up, and very cooperative and helpful in providing materials for it. The company made it a point to purchase most of the items tried out, in order to avoid being under obligation to any manufacturer or supplier.

In a few instances test samples were loaned by the manufacturer. One concern, having a newly designed ceiling to offer, flew not only the ceiling materials but the engineers who designed it all the way from the West Coast. Others went to considerable lengths to provide at the proper time things which were in relatively short supply. The manufacturers also brought forth a number of suggestions as to how materials might be better utilized or products modified. Some of the suggestions will undoubtedly be incorporated in final designs.

Actual decisions in each instance were arrived at not only by careful inspection of the physical and engineering characteristics of products tested, but by detailed initial cost comparisons prepared by Turner. Wherever it was appropriate, further studies were made as to long-time

(*Continued on page 60*)

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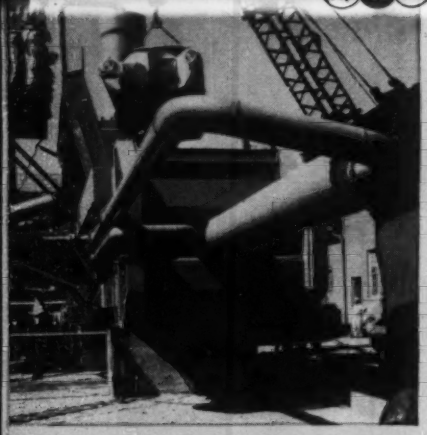

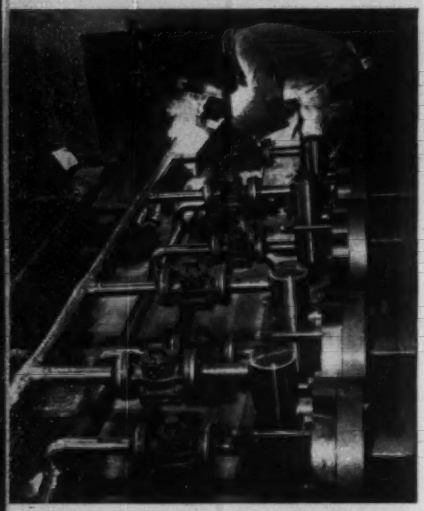

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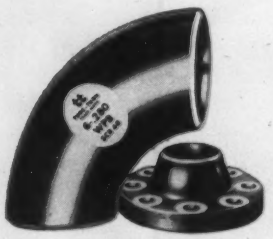

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Support of these slab forms was quickly and easily accomplished from above with the Richmond Free Fit Hanger Frame-Ty. (Bridge above Ardsley over Saw Mill River Parkway—part of New York State Thruway construction; Raylin Construction Corp. and The Lynn Corporation, general contractors.)

Study of Slab Form Support Shows Savings with Richmond System

By what standards do contractors measure the effectiveness of flat slab form support methods? Which support systems are proving most helpful?

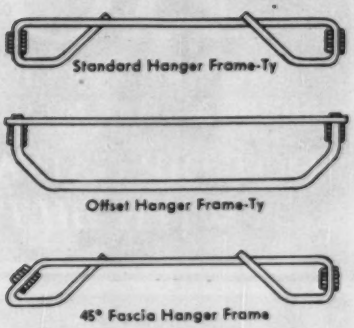
A survey brought out the following facts: *experienced contractors measure the effectiveness of flat slab form support systems in terms of three things: the degree of speed, safety and economy which they bring to a job.*

Loose wire is no longer used extensively because it meets none of the above three requirements. The use of wire beam saddles also is becoming less common. Although prefabricated to size, they are non-adjustable, and there is no positive means of tightening against the steel to prevent leakage of concrete.

Posting or "horses" are still used but this method is comparable to bracing wall forms. Prefabrication costs are high and erection is slow because of wedging and nailing usually required at the bottom flange of the beam. On high structures and deep beams this procedure is dangerous because the men have to reach down to the bottom flange to make the final tightening adjustment.

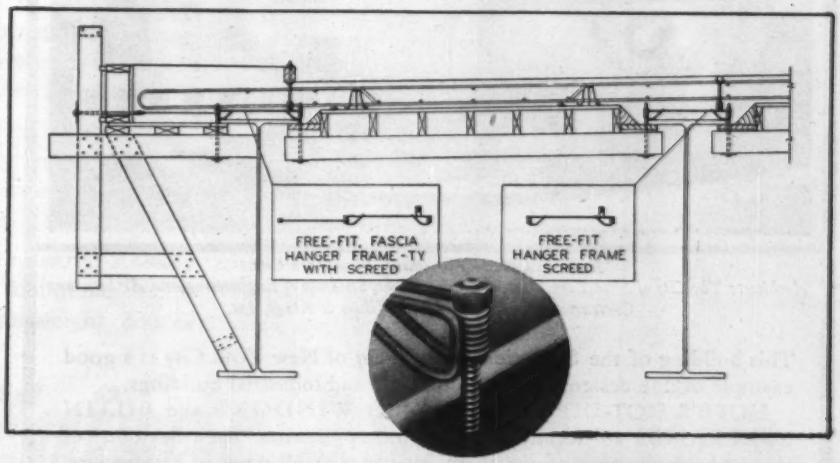
Richmond Hanger Frame-Tys are ideally suited to hang this type of construction. These units in Standard, Free Fit or Offset types (see illustrations) can all be adjusted for various slab heights and haunch conditions. Their established safe working loads enable the contractor to take full advantage of lumber strength and hanger capacity.

Richmond Standard and Offset Hanger Frame-Tys can be erected with a minimum of reaching under the *top* flange of the beams. Richmond Free Fit Hanger Frame-Tys have an additional advantage: all tightening is done from the top of the hanger by means of the nuts (see circle in large illustration), the Tylag passing freely thru an oversized coil.



Dual uses of these Richmond Hangers have become standard: Fascia Hanger Frame-Tys used not only to hang the forms but also tie in the Fascia Ty; a variation of this is the 45° Fascia Hanger Frame for light overhang, where one 45° bolt supports the fascia overhang and hangs the form; Hanger Frame Screeds combine support of the deck forms with an adjustable base for screeding or supporting curb forms.

Richmond Hanger Systems have reduced the contractor's overhead in time and materials, added safety to his operation and improved the quality of his work. The various types of Richmond Hanger Systems and their applications are detailed in the 1955 Richmond Catalogue. Write for your copy. Or, if you have specific concreting problems, Richmond's Technical Division or field men will be glad to advise you.



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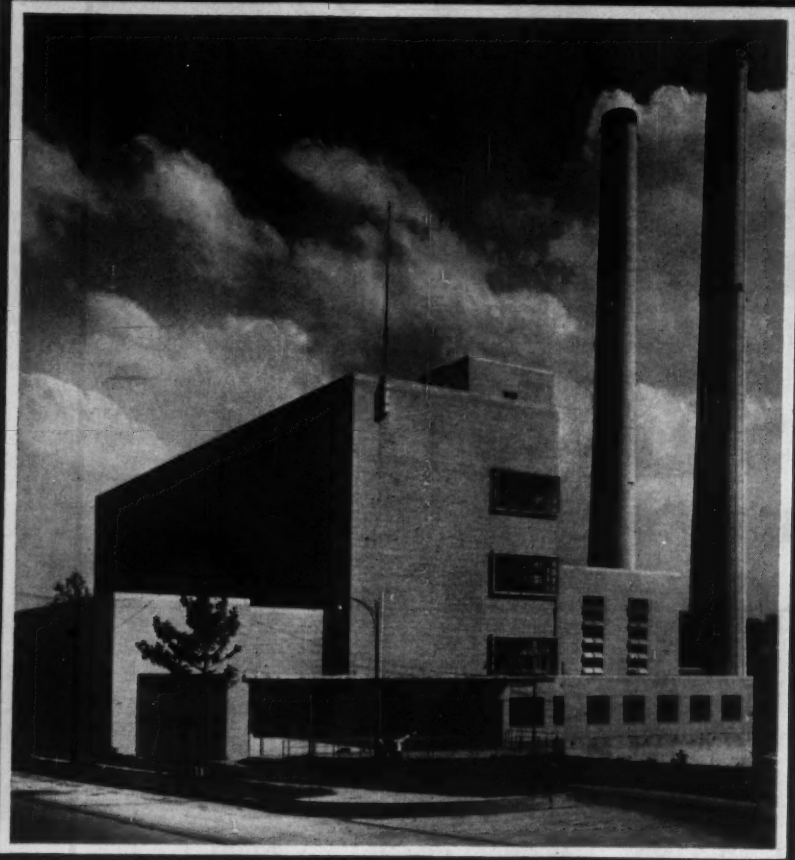

Betts Ave. Destructor Plant, New York City
Architect: The City of New York Dept. of Public Works, Division of Engineering and Architecture
Contractor: Grove, Shepherd, Wilson & Kruge, Inc.

This building of the Sanitation Department of New York City is a good example of fine design among commercial and industrial buildings.

HOPE'S HOT-DIP GALVANIZED WINDOWS and BILTIN SUBFRAMES are ideally suited for this application. Their flexibility of size and arrangement adapts them for use with all types of architecture. They provide any required amount of ventilation and daylight. They have unmatched strength and rigidity, require little maintenance.

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operating costs. In the case of lighting systems, power consumption per foot is a factor both directly and indirectly, since it affects air conditioning loads. With floors, the question of ease and cost maintenance, ability to resist identation, the possibility of replacing damaged sections, and other factors all entered into the decision.

Assisting the Company in its evaluation, in addition to the architects and builders and Syska & Hennessy, the mechanical engineers, were a number of special consultants. On the question of acoustics the firm of Bolt, Beranek & Newman was called in. In lighting, General Electric, Westinghouse, and Sylvania made available without cost the experience of their experts, as did the Hartford Electric Light Company. Participating in most of the major decisions, as the Company's general consultant on building construction, was Professor Walter Voss of M. I. T. Weiskopf & Pickworth, structural engineers for the job, also participated in discussion.

• **Costs**—The costs of the mock-up and of the experiments in it appear fairly substantial until they are related to the cost of the project as a whole and to the possible savings which pretrial should effect.

Taking into consideration the actual cost of the structure, the cost of its ultimate demolition, and the cost of all experimental work carried out in it, we estimate the total out-of-pocket expenditure to amount to something like 1% of the total cost of the project. To a company like Connecticut General, whose basic business is insurance, 1% looks like a very small premium to insure against the possibility of major and expensive errors in relatively untried phases of building construction.

Actually, the cost of the mock-up may be negative, though the point can never be proved. The effect of saving an estimated 10-cents-a-square foot on some 350,000 feet of ceiling, referred to earlier, indicates a saving of $35,000. Turner Construction Company (believes) the ability of its foremen and subcontractors to work out details and installation processes on a small scale before trying them on a large scale will result in further economies.

The real economies and the real value of the mock-up, however, lie not in the actual dollar savings but in the much greater assurance that the Company's new building—to be its home and base of operations for at least fifty years, we think—will give us the facilities best suited for the carrying out of the Insurance business and the most pleasant as working quarters for those who will spend their business lives in the building.

OIL STORAGE WAREHOUSE of Carter Oil Co., Tulsa, Oklahoma.

To beat high maintenance costs . . .

You virtually eliminate costly building maintenance with Kaiser Aluminum Industrial Roofing because it's rust-proof—*needs no painting or other expensive upkeep.*

Even when exposed to most highly corrosive fumes and gases, Kaiser Aluminum Industrial Roofing requires no special protective measures.

Not only does Kaiser Aluminum Industrial Roofing provide greater protection and lower maintenance . . . it also assures *immediate savings.* Its light weight reduces transportation and handling costs. And it often requires lighter, less expensive supporting structures.

Whatever you're building—figure first in Kaiser Aluminum Industrial Roofing—for better value at lower cost! For A.I.A. File and complete information, contact any Kaiser Aluminum sales office listed in your telephone directory. Or write Kaiser Aluminum & Chemical Sales, Inc. *General Sales Office,* Palmolive Bldg., Chicago 11, Illinois; *Executive Office,* Kaiser Bldg., Oakland 12, California.

think of Kaiser Aluminum

Industrial Roofing and Siding

LOW COST—Provides a combination of advantages not available in other materials at any price.

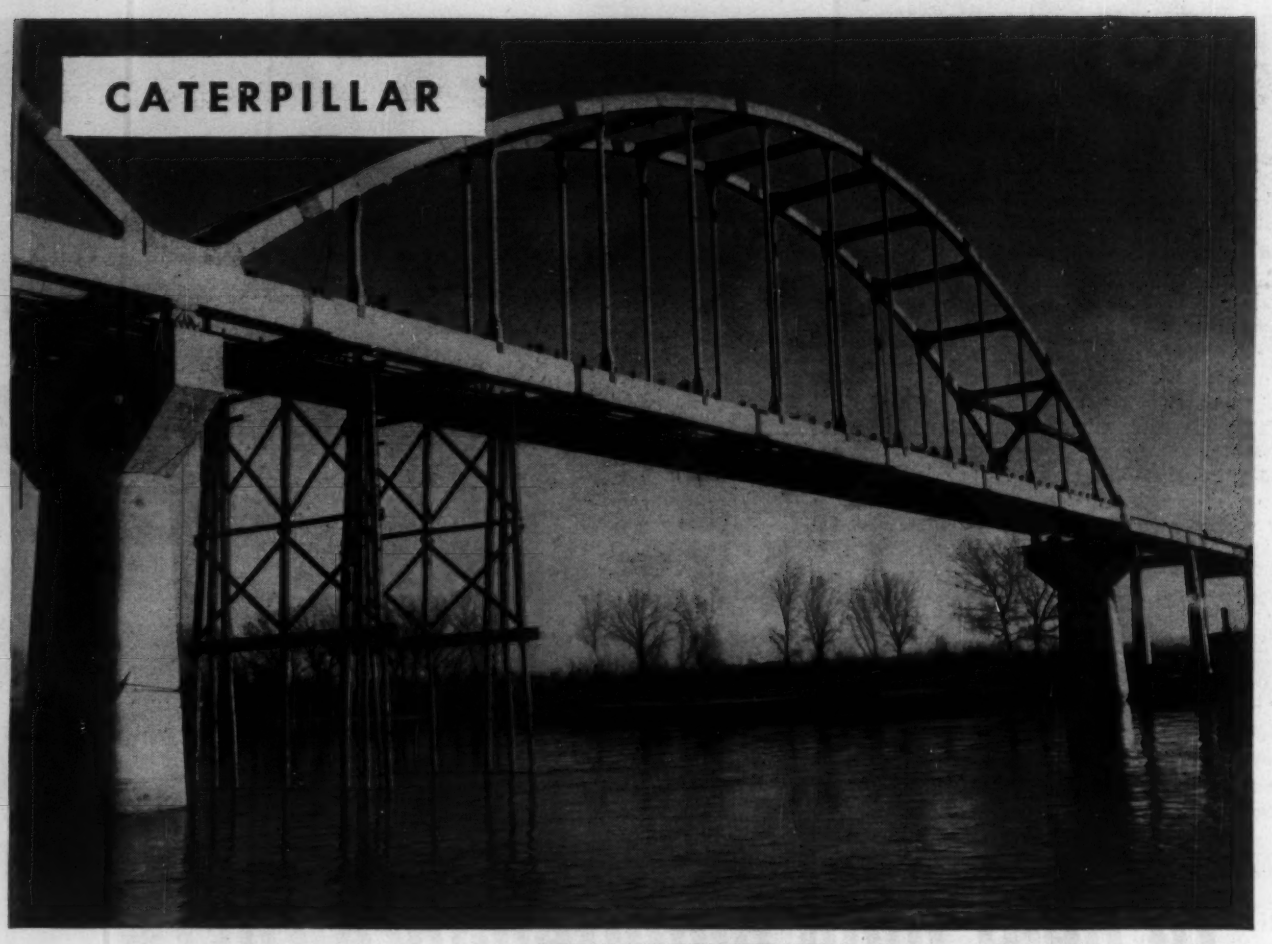
LIGHT WEIGHT—Reduces transportation costs. So easy to handle that construction is faster, lower in cost. Often permits the use of lighter, less expensive framing.

STRONG—The increased depth (⅞") of the corrugations of Kaiser Aluminum sheet provides greater load carrying capacities over the longer spans of modern industrial construction.

CORROSION RESISTANCE—High resistance to most industrial fumes. Can't streak with red rust. Maintains attractive appearance indefinitely.

LOW MAINTENANCE—Never needs painting. Resists heavy winds and hail.

COOLER, BRIGHTER INTERIORS—By reflecting hot sun rays, aluminum keeps interiors as much as 15° cooler. Aluminum's reflectivity insures extra interior light.



$4,000,000 MISSOURI RIVER BRIDGE at Leavenworth, Kansas, showing one of the two 420-foot tied-arch spans. It carries two lanes with an over-all width of 26 paved feet.

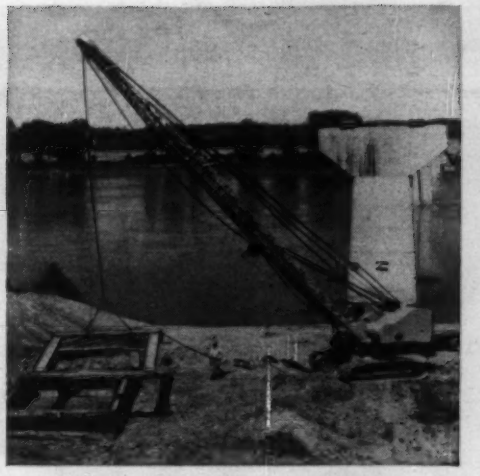
NEW BRIDGE TECHNIQUE COMES TO THE MIDWEST

DW21 IS PUSH-LOADED BY D8 for Roberts Construction Co., which moved 960,000 yards of sandy earth for the east approach. Approximately 38 feet of fill were required at the approach end. No. 12 Motor Graders were used to maintain the haul road.

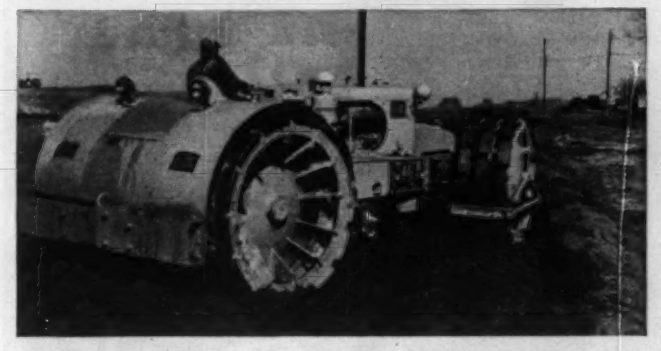
The recently completed Missouri River bridge at Leavenworth, Kansas, consisting of two 420-foot tied-arch spans with a 735-foot continuous girder approach on the east and an 860-foot continuous girder approach on the west, made use of two new techniques and one old standby.

New is the use of a heavy box girder bottom chord for the two arch spans which was continuous over the center pier and Vierendeel bracing. Traditional is the use of CATERPILLAR* equipment by all four contractors, helping them complete the bridge in 13½ months.

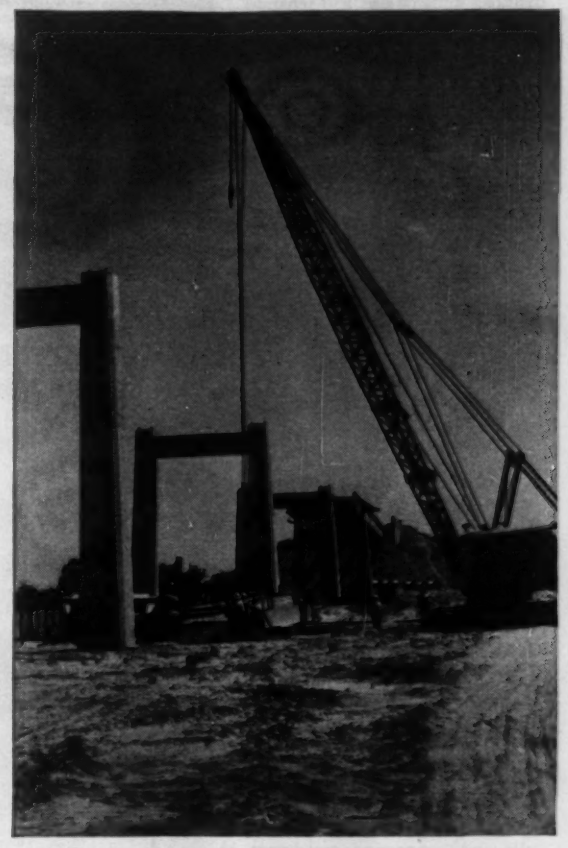
The use of the continuous bottom chord for the arch spans required the use of only one pair of shoes, rather than two, in the center pier, and permitted the use of a narrower pier. Vierendeel bracing replaced the conventional "X" type wind bracing. The use of these new techniques resulted in considerable savings.



D318 POWERS KOEHRING CRANE as it moves one-ton whalers for Maxwell Bridge Construction Co. Crane was used for setting forms, pouring concrete, driving pile, erecting and laying steel.



A CAT D318 DIESEL powers this new Buffalo-Springfield Kompactor, the first such unit used in the Kansas City area. Here it is used by J. A. Tobin Construction Co., which graded and seeded the west approach and paved six miles of east approach.



MANITOWOC CRANE POWERED BY D17000 unloads I-beams and sets them in place for Kansas City Bridge Co. By itself, it handled beams up to 95 feet long and weighing 20½ tons. A D13000 powered the Gardner-Denver compressor, at left, which furnished power for two riveting guns and rivet heater.

Novel use of tied-arch spans and bracing on bridge at Leavenworth

But there was nothing new about the use of Caterpillar equipment on the job. Kansas City Bridge Co. built the approach viaduct on the east side of the Missouri, which consisted of six bents and one abutment, supporting the continuous girder spans. Caterpillar yellow was the predominant color of the equipment, like the powerful D17000 Diesel Engine which powered a Manitowoc crane for unloading I-beams and setting them in place.

Drawing on more than 30 years in the business, R. D. Bleich, general superintendent for Kansas City Bridge Co., said, *"We know CAT* equipment will always stay in there and do the job."*

Grading, drainage and seeding on the east approach roads was done by Roberts Construction Co., Lincoln, Nebr., which moved 960,000 yards of sandy earth, as a subcontractor for Olson Construction Co. of Lincoln. Cat equipment on the job included four DW21s, three No. 12 Motor Graders and eight D8s, one D7, two D4s and two No. 80 Scrapers. Equipment worked 18 hours a day, six days a week and brought this comment from operator Charles E. Jones:

"Caterpillar makes the best earth-movers going, and I've run everything made."

Maxwell Bridge Construction Co., Columbus, Kansas, built 900 feet of the west approach, including eight bents and the concrete floor. Its workhorse was a Koehring crane powered by a trouble-free Cat D318 Diesel.

"When you get to heavy work, you can't beat a Caterpillar Diesel," reported L. D. Paul, superintendent.

Grading and seeding on the west approach, and six miles of paving on the east approach, was done by J. A. Tobin Construction Co., Kansas City, Kansas. Again big yellow equipment was on the job.

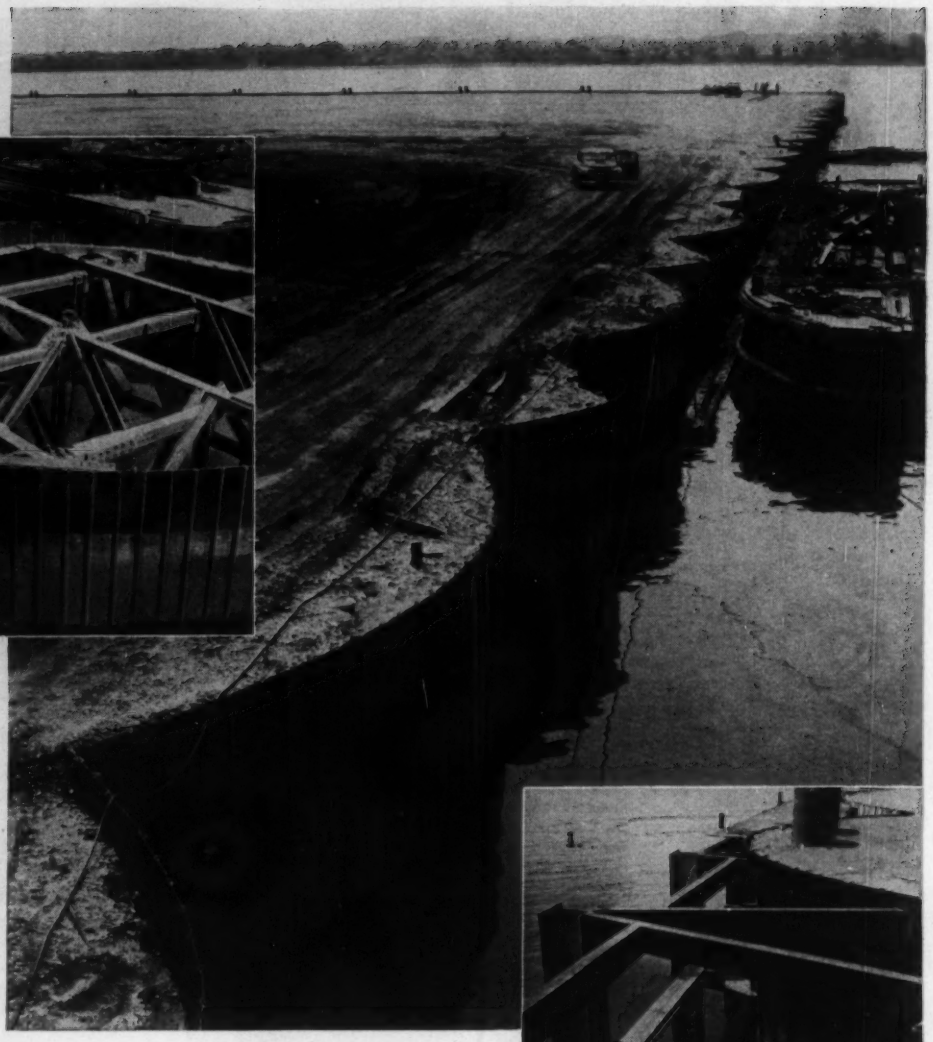
"Cat-built machines are all we use," said a foreman. *"We couldn't get along without them. They stand up and do more work."*

Like construction men everywhere, the four contractors who built the unique Leavenworth span are in complete agreement in their approval of Caterpillar equipment.

CATERPILLAR TRACTOR CO., PEORIA, ILLINOIS, U. S. A.

*Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

Sheet-piling cells are 60 ft in diameter and contain 150 separate piles. Connecting arcs contain 22 piles. Total tonnage of sheet piles was over 6200.

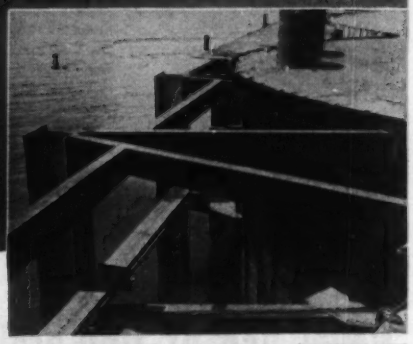


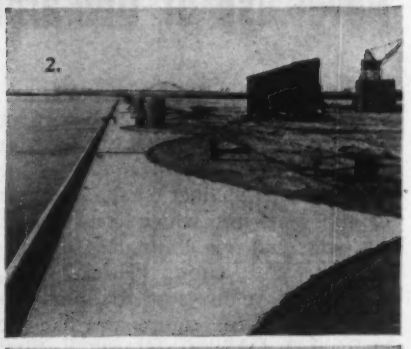
When completed, pier will be surfaced and equipped with latest-type cargo-handling equipment. Piles were driven by Northern Metal Co., of Philadelphia, Max Rose, president.

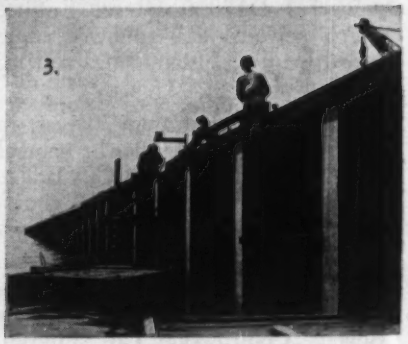
1. Fender system consists of H-piles and structural shapes welded to steel cells.

2. Steel plate cut to fit curves of cells and connecting arcs, completes fender system.

3. Pier has almost perfect alignment. 1000 tons of H-piles were used in fender system.







SHEET-PILING CELLS FOR 120-ACRE PIER DRIVEN IN 40 FT OF WATER

Thirty-five permanent sheet-piling cells and connecting arcs were driven in 40 ft of water in the construction of this huge new pier for Northern Metal Company, of Philadelphia. Over 1,500,000 cu yd of fill were used behind the cells to form a pier with 120 acres of storage space, and with 2400 ft of water-front berthing space.

Each cell has a diameter of 60 ft and is made up of 150 Bethlehem Steel Sheet Piles. The connecting arcs contain 22 piles. In all, more than 7200 tons of Bethlehem Piling were used in constructing the pier, including 1000 tons of H-piles used to build the fender system with which the pier is fronted.

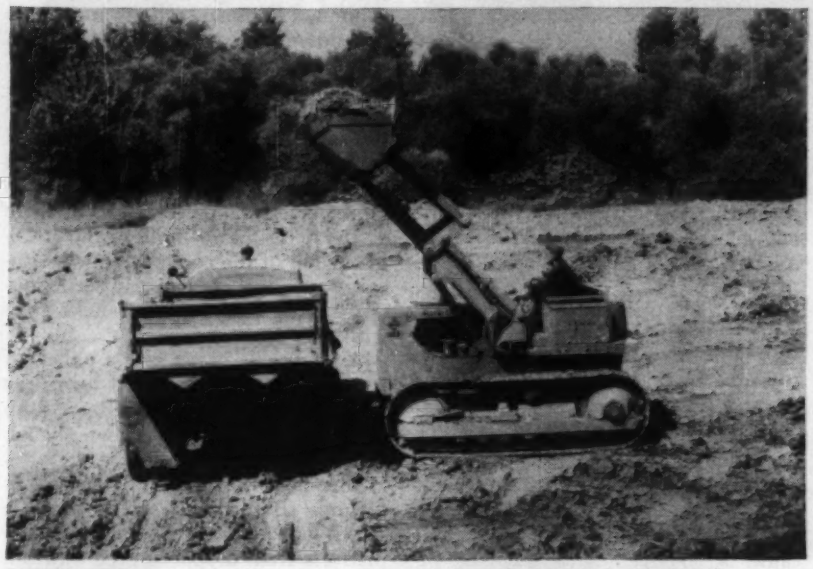
The piling was so carefully placed that when the fender system is completed and the steel plates are in place, it is expected that alignment will be almost perfect along the waterfront.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corp. *Export Distributor:* Bethlehem Steel Export Corporation

BETHLEHEM STEEL

BETHLEHEM STEEL



REVAMPED tractor-shovel is powered by diesel producing 45 hp at drawbar.

A-C Tractors Are Improved in Design

Allis-Chalmers has announced two new diesel-powered units—the 12,400-lb HD-6 crawler tractor and the 19,-600-lb HD-6G tractor shovel with a rated capacity of 1¼ cu. yd. Many of the features introduced with other A-C tractor models brought out this year are incorporated in the HD-6 and HD-6G.

The heart of the HD-6 and HD-6G's power train is an Allis-Chalmers HD-344 diesel, a four-cylinder, four-cycle unit that develops 57 net flywheel hp, 45 hp at drawbar and 55 hp at the belt.

In the HD-6 the maximum drawbar pull is approximately 12,650 lb. It has five forward speeds ranging from 1.5 mph in first to 5.5 mph in fifth gear, and 2 mph in reverse. The HD-6G has four forward speeds which also range from 1.5 to 5.5, and two reverse speeds at 2 and 4.1 mph.

Operator comforts incorporated into both new tractors include foam rubber seat and arm rests covered with weather-resistant plastic; tapered hood and narrow cowl to give operators a clear view of front-mounted equipment; and what are said to be conveniently located, easy operating clutch levers and brake pedals.

Special interchangeable equipment for the HD-6G includes rock, drag and light materials buckets; an angle-dozer and two bulldozer blades; crane hook; trench hoe; lift, tine, and rock forks. Accessories include replaceable bucket teeth and a rear outlet from the shovel hydraulic system to operate other units such as scrapers, rippers, and other equipment.

A full line of matched mounted and drawn equipment for the HD-6 is also available. There is included a hydraulic angle and a straight blade dozer; ripper; power control units; winches; four-wheel scrapers; and log cart. Accessories include tractor cab, canopy top, special track shoes, power take-offs, heavy-duty filters, heavy-duty truck wheels, heavy-duty idlers, and heavy-duty truck frame guard equipment. Allis-Chalmers Mfg. Co., Tractor Group, Milwaukee, Wis.

Interchangeable Barrels Give Stud Driver Dual Usage

The Remington Model 455 stud driver has interchangeable barrels that can be switched to adapt the tool to standard or heavy duty jobs.

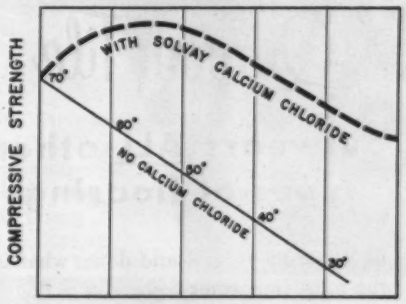
The operator can change barrels to convert from ¼-in. stud capacity to ⅜-in. studs in less than 90 seconds. A disc attachment on the heads of studs permits the operator to drop studs into the barrel chamber without forcing, and slide ejection of spent cartridges clears the chamber for another charge.

The Model 455 accommodates 25 types of ¼-in. studs ranging in length from 1 to 3¼-in. or 12 types of ⅜-in. studs of lengths from 1½ to 4¾ in.

The tool is constructed of aluminum and hardened steel, and by the removal of a readily accessible set screw, the stud driver can be adjusted

SOLVAY

CALCIUM CHLORIDE KEEPS CONCRETE STRENGTH from DROPPING with the TEMPERATURE



The Addition of SOLVAY CALCIUM CHLORIDE to Concrete During Cold Weather...

- Speeds finishing
- Cuts delays between operations
- Provides greater safety
- Permits faster removal of forms
- Assures full strength

NEW 25 LB. BAGS FOR READY-MIX CONCRETE

Easy-to-Handle
•
Assures Accurate Measurement
•
Saves Time

FOR FULL INFORMATION MAIL COUPON

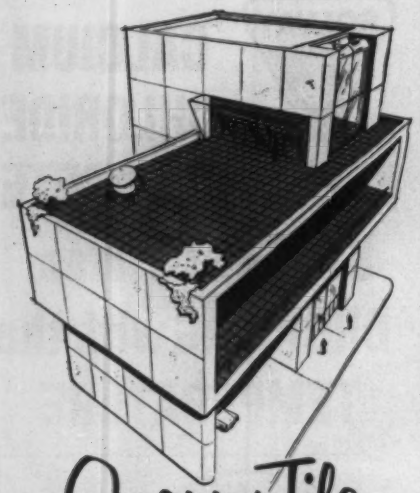
Allied Chemical — SOLVAY PROCESS DIVISION
Allied Chemical & Dye Corp.
61 Broadway, New York 6, N. Y.

Gentlemen:
Please send me—WITHOUT COST OR OBLIGATION:

☐ "When the temperature drops BELOW 50°F., do you know what happens to CONCRETE?"

☐ "The Effects of Calcium Chloride on Portland Cement"

Name .....
Company .....
Address ..... Position .....
City ..... Zone.... State..... EN-9



Quarry Tile

outwears ALL other types of flooring

■ When all is said and done; what is the most important feature of a floor? We think that you will agree that it's wearing quality.

When you specify Summitville Quarry Tile, you specify lifetime durability without fading or deterioration in addition to these plus features.

INHERENT BEAUTY— Summitville Quarry Tiles are famous for consistent, deep, rich color.

WEATHER-PROOF — Once properly installed, Summitville Quarry Tiles are frost-proof, water-proof, and will not crack or fade... equally "at home" inside or outside.

SANITARY— Quarry Tile is acid-resistant and will not spot or stain.

MAINTENANCE-FREE — No other flooring material requires less maintenance. Sweep it... damp mop it... and original beauty is restored. Never needs waxing.

For the full Quarry Tile story, as well as estimates, check the Yellow Pages of your telephone directory for "Tile Contractors—*Ceramic.*"

Summitville TILES, INC.

SUMMITVILLE, OHIO

to a two-handed operation where regulations require it.

The stud driver cocks only when depressed against the work—as soon as pressure is released, the tool uncocks. Safety guards, standard or special, are fitted to the tool with clamping motion. All guards rotate 360 deg, and the snap lock is actuated by a thumb lever on the lower housing, permitting fast changeover when various guards are in use. Remington Arms Co., Inc., Bridgeport, Conn.

Monorail Hoist Conserves Space on Construction Jobs

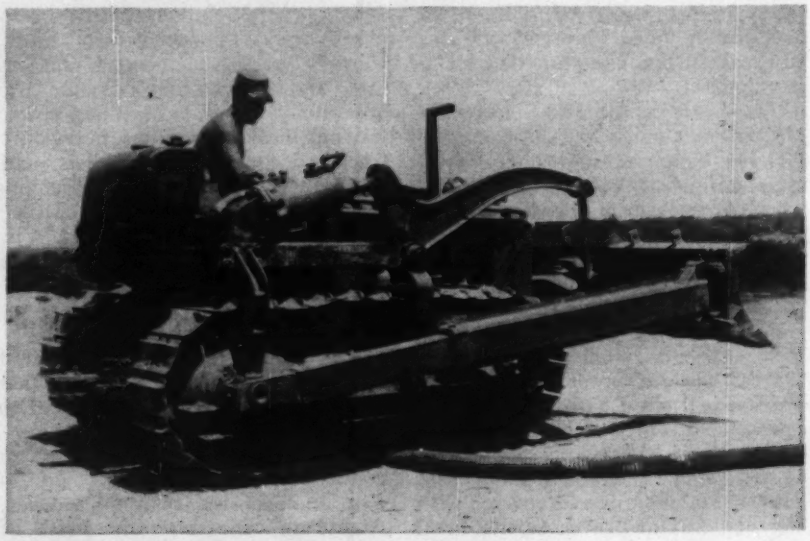
A new type hoist, consisting of a platform which rides on a single column, can be erected by two men in three hours.

The Hawkeye Hoist operates on a rigid vertical monorail that builds upon itself to any desired height. Because of the small area occupied by the column, the hoist is said to be suitable for installation in many places where other types of towers or lifts might not be practical. Simple to set up and operate, it also can be disassembled quickly into units of 6 ft or less, making it easy to move from one location to another on a project or to transport in a light pickup truck.

When erecting the vertical H-beam column, additional sections are carried up and mounted on the hoist's own platform. A temporary steel supporting pin is placed underneath the carriage to uphold the platform while the cable and top sheave are removed so that a new section may be fastened in place. With the addition of a stabilizer bracket about every 18 ft, there is, theoretically no limit to the possible height of the column. In rare situations where there is no adjacent support, the column can be held erect with guy wires.

A steel cable passes over a pulley on top of column to raise and lower the platform. This is operated by a 5 hp electric motor or a gasoline engine; load capacity is one ton.

The hoist has a number of safety features. If the cable should break, a safety lock automatically prevents the platform from dropping, even with full load. An emergency switch mounted on th carriage stops all operations in event of default of operator at ground control box. Further, safety limit switches automatically stop the platform at top and bottom extremes of column. *Hawkeye Engineering Co., Syracuse 4, N. Y.*



Tough Suction Hose Resists Crushing

A new water suction hose is reported to spring back to original shape if run over by trucks or other heavy equipment. Called Morecon, the secret of the springiness of the new hose is a continuous coil of hemp rope, specially treated and imbedded in thick rubber. Medium weight fabric plies are wrapped around the hose to support end-pull or tugging action in suction service. The hose is recommended to handle normal suction with maximum working pressures ranging from 70 psi in the 1-in. size to 40 psi in the 3-in. size. A corrugated cover of tough black rubber reportedly resists sun-checking, abrasion and the effects of aging. The hose tube is a smooth, non-porous rubber that handles gritty and mildly corrosive fluids. It is available in sizes 1, 1¼, 1½, 2, and 3 inches. The B. F. Goodrich Co., Industrial Products Div., Akron, Ohio.

(Continued on page 18)

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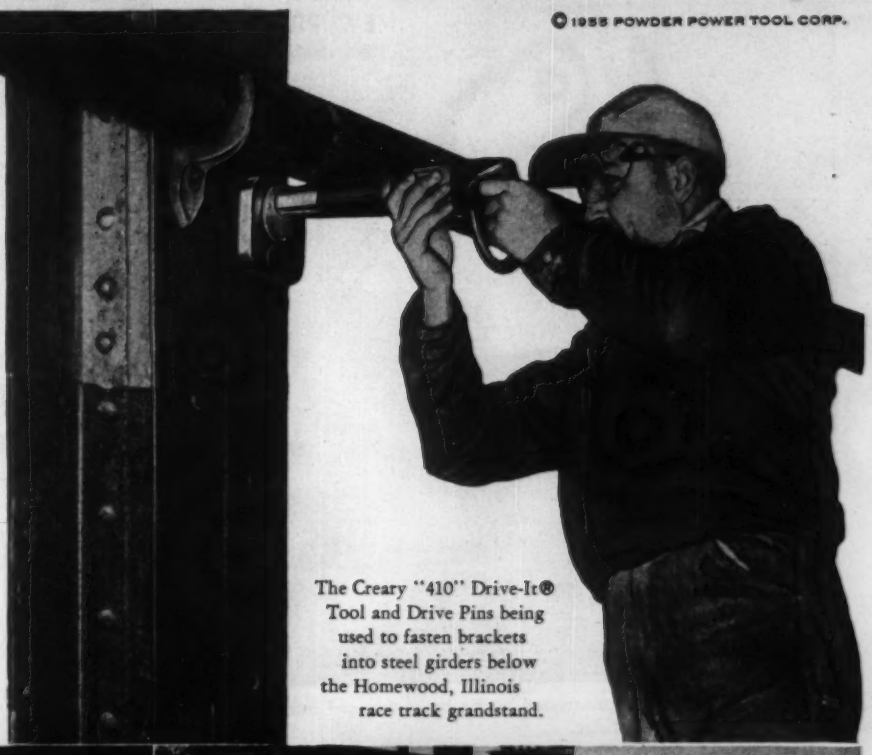
WHAM!

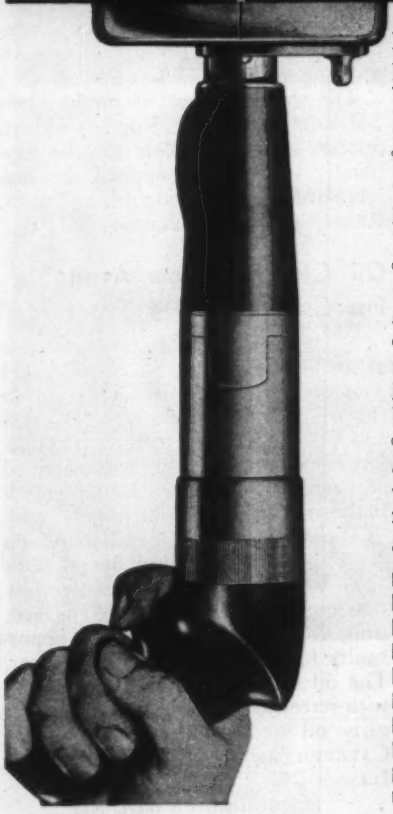
–and it's fastened in steel or concrete with the



The Creary "410" Drive-It® Tool and Drive Pins being used to fasten brackets into steel girders below the Homewood, Illinois race track grandstand.

pioneer cartridge-powered fastening tool

Creary POWDER POWER Drive-It®



Let the Creary *Drive-it* Tool cut your fastening costs in half, when you make permanent fastenings in steel or concrete. Imagine the time and money savings, when you make a fastening every 15 seconds!

8 reasons why Creary DRIVE-IT® TOOL speeds up construction, reduces on-the-job costs

1. Two cartridge-powered tools for light, or heavy jobs. The new Creary "330" Drive-It (.25 cal.); the heavy-duty Creary "410" Drive-It (.38 cal.)

2. Snap-open action for fast loading and ejection. Greatest operating speed of any cartridge-powered tool.

3. Requires only one standard power load for all fastening jobs. No need to buy different strength cartridges for each job.

4. Automatic cartridge extraction when breech is snapped open. Gives more fastenings per minute.

5. Safety in firing, as Drive-It Tools must be pressed firmly against the work surface before tool can be fired.

6. Steel encased rubber guard completely surrounds work area. Another of the many safety and convenience features which make Creary Drive-It Tool the choice of contractors everywhere.

7. Barrel extension allows fastening in recessed areas such as junction boxes, deep channel iron, and other confined spaces.

8. Creary Drive-pins are U. L. approved, will penetrate up to an inch of structural steel and withstood a 10,000 lb. pullout test by Pittsburgh Testing Laboratories.

WRITE FOR FREE CATALOG AND CREARY DRIVE-PIN SAMPLE

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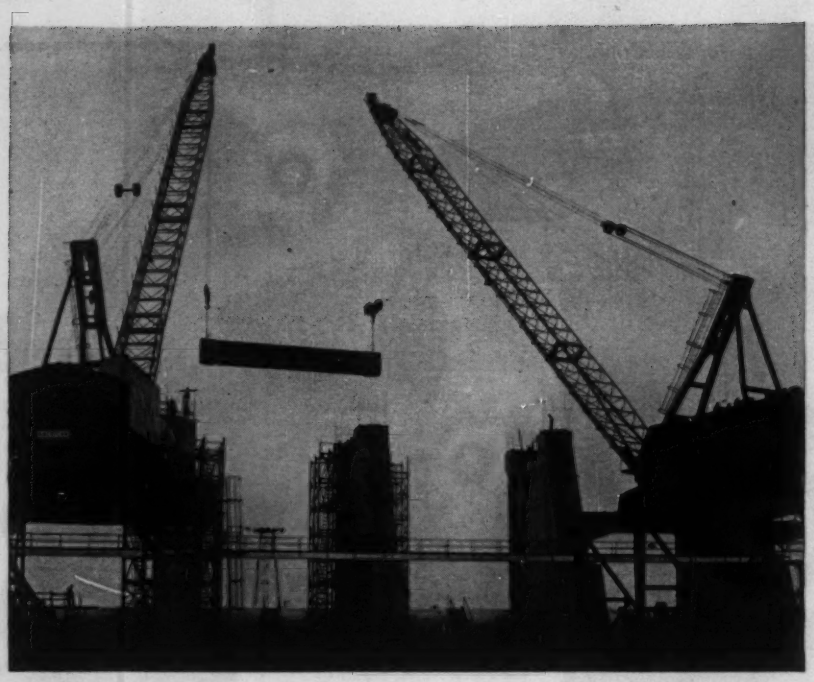


A 35-TON precast and prestressed girder being lowered into place in the north row of girders for the spillway bridge.

Unique Vibrator Mounting Enables Spillway Contractor to Vibrate Portion of Girder Impossible to Reach Internally

• **Contractor's ingenuity** has been an important factor in precasting and prestressing operations of the 32-span bridge of massive Garrison Dam which cuts off the Missouri River channel at Riverdale, North Dakota. Precasting and prestressing, although only a small part of the $13,300,000 stage I spillway contract, presented unexpected problems in placing the concrete.

• **The huge concrete slab** of the spillway chute was used as a casting bed for precasting and prestressing by the contractors on the project, Johnson, Drake & Piper, Inc.; C. F. Lytle Company; Foley Brothers, Inc.; Winston Brothers Company, and Donovan Construction Company. Among the many members cast on the job, were 64 girders, 47.33 feet long and 6 feet high. Viber Model PX high speed pneumatic external vibrators were used underneath on the first ten to twelve inches of concrete. It was impossible to reach this concrete with internal vibration due to the seven cables that fill the seven inch web.

A WORKMAN opens the valve to start a VIBER pneumatic vibrator held against the lower flange of a girder form by a Blackhawk floor jack. This external rig can be quickly moved to another location.

• **A novel rig** for mounting external vibrators was so portable that the contractor was able to place this concrete with two VIBER Model PX external vibrators. As concrete was placed, the jack and vibrators were rolled under the girder form between timber supports. Raising the jack forced the vibrator to bear against the form, vibrating the mix. Through use of this rig, the vibrator could be quickly shifted to another position against the form or rolled to the next pour.

• **For further information** on Viber's complete line of internal and external vibrators, contact your authorized distributor or Viber Company, Dept. 76, 726 South Flower Street, Burbank, California.

VIBER

CONCRETE VIBRATORS SINCE 1931

NEW PRODUCTS

Metal Lath Added to Plastic Panels for Heavy Guard Duty

A new fiberglass panel reportedly makes many new applications possible because of its increased strength and rigidity. In the new panel a sheet of expanded metal lath is embedded in a layer of fiberglass mat impregnated with polyester resin.

The product is suitable for glazing security windows, small unsupported skylights, truck side panels, housing dangerous equipment and other screening for security, privacy and dustproofing.

The standard sheet is produced in 8-ft lengths and 1, 2, 3 or 4-ft widths. Special sizes and colors can be supplied. It is also supplied in fire-retardant or "self-extinguishing" resin. RESOLITE CORP., ZELIENOPLE, PA.

Oil Clutches Now Available For Caterpillar D4 Tractors

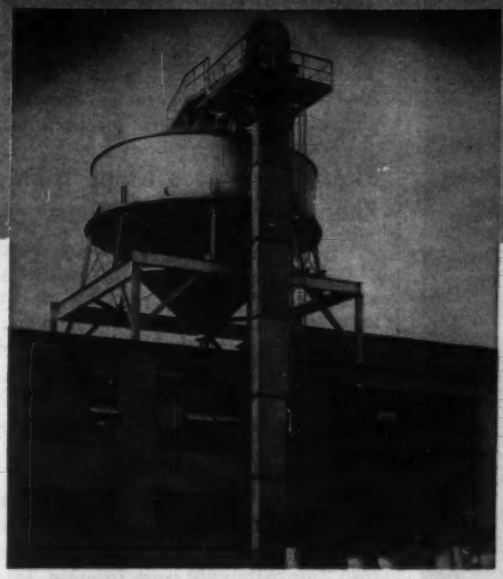
A new oil clutch is now available as an attachment for Caterpillar D4 Tractors. It is similar in design to the oil clutches in the D6, D7, D8 and D9 models and features metallic-faced clutch discs, a self-contained gear-type pump and oil supply clutch brakes for easy gear shifting.

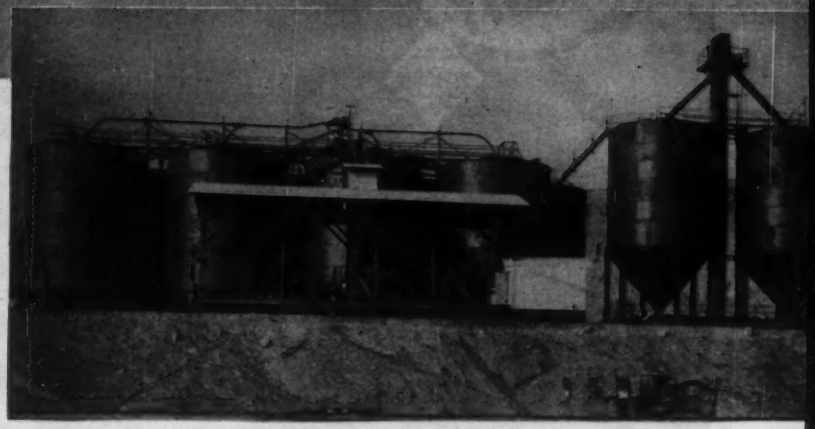
The three metallic-faced plates on the clutch are separated by oil films at all times except for the last revolution or two as the clutch is engaged; thus, there can be but slight opportunity for wear and heating to occur. The oil system includes an oil pump with screened inlet and passages which carry oil to all parts of the clutch. CATERPILLAR TRACTOR CO., PEORIA, ILL.

(Continued on page 70)

Steel BINS of every type

for ECONOMICAL storage of **FREE-FLOWING DRY MATERIALS**





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PITTSBURGH • DES MOINES

Resolve your materials-storage problem with job-engineered Pittsburgh-Des Moines Steel Bins—correct in type and size—expert in craftsmanship—with satisfaction guaranteed. *Write for quotations.*

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LOS ANGELES (48), ... 6399 Wilshire Blvd.
DES MOINES (8), 915 Tuttle Street
DALLAS (1), 1219 Praetorian Bldg.
SEATTLE . . . . . 522 Lane Street
SANTA CLARA, CAL., 621 Alviso Road

There's one way to be sure when you specify plywood for form work . . .

LOOK FOR THE DFPA* TRADEMARK!

DFPA TESTED QUALITY

When you specify grade-trademarked fir plywood, you're sure of material manufactured under the rigid industry quality control program and independently quality tested by DFPA* to protect the buyer. Here are grades expressly made for form work:

1. INTERIOR PLYFORM — made with highly moisture resistant glue for multiple concrete form re-use.

2. EXTERIOR PLYFORM — made with waterproof glue for maximum form re-use.

3. OVERLAID PLYWOOD — glossy, smooth, tough resin-fiber surface fused to Exterior plywood. Gives greatest re-use plus smoothest concrete. EXT-DFPA* on panel means 100% waterproof glue.

EXT-DFPA TESTED QUALITY

*DFPA Douglas Fir Plywood Association, Tacoma, Wash., is a non-profit industry organization devoted to product research, promotion and quality maintenance.

PLOTTER can be used for low-cost mapping of housing projects, pipelines, etc.

Plotter Produces Maps from Photos with 1-ft Contours

Costs of producing surveys and maps for a wide variety of industrial and engineering uses can be greatly reduced through use of a new aerial mapping instrument. Price is less than half of previous units.

Known as the Balplex Plotter, it will produce maps from aerial photographs with contour intervals as small as 1 to 2 ft.

The plotter consists of a precision table over which are mounted two projectors. Photographs are converted into transparencies and inserted into the projectors. When viewed with special stereo glasses, the two projected images produce a three-dimensional picture of the earth's surface. The operator then traces the ground image with a tracing table which records the surface of the ground at a particular level, producing a contour line. After this the table is readjusted to produce each subsequent contour line.

The projection transparencies, known as diapositives, are 110 mm. square—a size which permits retention of all necessary details in the original 9x9 aerial photograph. Accurate maps with scales as large as one inch to 50 feet can thus be produced, and maps can be made from photos taken from heights as low as 1,000 feet or as high as 35,000 feet.

The instrument sells for approximately $4,250 and, the Balplex projector frame can accommodate two additional projectors which sell at $2,160 a pair. Bausch & Lomb Optical Co., 635 St. Paul St., Rochester, N. Y.

(Continued on page 72)

Keep Your Rigs Rolling in Cold Weather

Timely hints to help keep your earthmoving equipment on the job during winter months

Don't let snow and ice "freeze" your profits! You can keep on moving dirt well into winter if you follow the simple cold weather procedures outlined below.

Your profits depend upon continuous operation all seasons. These tips to your operators and maintenance men will pay big dividends if followed carefully.

Add Anti-Freeze

Drain and thoroughly flush the cooling system. Carefully check radiator, hose, gaskets, and connections for possible leaks. Be sure all connections are tight. Repair or replace if necessary.

Fill cooling system with a good grade of anti-freeze — preferably a permanent, ethylene glycol solution, with a boiling point higher than 180° F. Test the solution *at the end of each day* to make sure it is strong enough for protection against prevailing temperatures. A few gallons of anti-freeze are much cheaper than a broken engine block or radiator.

Use Winter Oils and Fuel

Drain summer-weight oils from engine crankcase, transmission and final drive. Use a good flushing oil to remove sediment and sludge. Refill with winter-weight oils and greases, recommended in equipment manuals.

Summer fuel may be a little heavy for use in winter operation, so *be sure* the pour point is low enough to permit it to flow freely through fuel lines and carburetor at low temperatures. Your fuel dealer can advise you on the proper grade. Be sure to keep fuel clean at all times and in winter be doubly sure to keep water, ice, and snow out of fuel and tank. Strain dirty fuel.

Keep Batteries Well Charged

A low-charged battery will not turn the engine over for proper starting. Also, it will freeze more easily than a properly charged battery. If batteries are nearing the end of their effective use, it may be advisable to replace them before winter starts. Check charge more frequently in winter, recharge or replace to maintain a higher standard than in summer.

Check water level often. Add necessary water during working periods so that water will mix thoroughly with battery electrolyte. Do not add water while machine is idle. It may freeze and ruin the battery.

Warm Up Period

Warm engine to operating temperature by idling at half-throttle for a few minutes to insure thorough circulation of oil. If engine does not heat properly, check cooling system thermostat.

If Diesel engines become hard to start in extremely cold weather, pre-heat the air taken into the cylinders. Some engines are equipped with pre-heating devices. On other engines, careful use of blow torch usually does the trick.

Working With Frozen Ground

Break up hard, frozen top soil with a Rooter or Dozer. Scrapers can then load without interruption. When using a Dozer for this purpose, dig in with one point of the blade until the frozen soil is broken through. Then work the blade under the frozen surface and lift it out in large chunks.

If load-carrying capacity of the tires will permit, reduce air pressures slightly when operating on rough, frozen ground. This will cushion shocks of running over frozen chunks, lengthening tire life. However, avoid striking sharp chunks of frozen earth with the tires.

End of the Day

Remove all dirt from scraper bowls and dozer blades before parking machine for the night. To keep dirt from freezing onto scraper bowl or dozer blade, spray after cleaning with a thin film of drain oil. When parking overnight or for any length of time, lower the scraper or dozer bowl onto planks to prevent bottom edge from freezing to the ground.

When machine is shut down, cover the exhaust pipe with a tin can or a similar object to keep rain or snow from entering. Open pet cocks on air-reservoir tanks to drain accumulated moisture when you shut down. Be sure to close cocks and build up air pressure before attempting to operate machine next morning.

When earthmoving machines are to be stored in the open and left idle for any length of time, always drain water from the radiator unless you are sure it is properly protected with anti-freeze. Also remove cylinder-block drain-plugs.

For free copies of this article, write LeTourneau-Westinghouse Company, Peoria, Ill., stating quantity desired.

G-745-OP-bw

LeTourneau-WESTINGHOUSE Company
Peoria, Illinois
A Subsidiary of Westinghouse Air Brake Company

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for a "*BABY DIGGER*"

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Clevelands dig more trench ... in more places ... at less cost.

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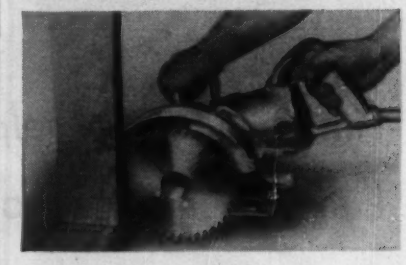
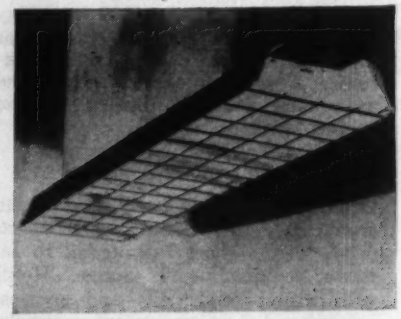
NEW PRODUCTS



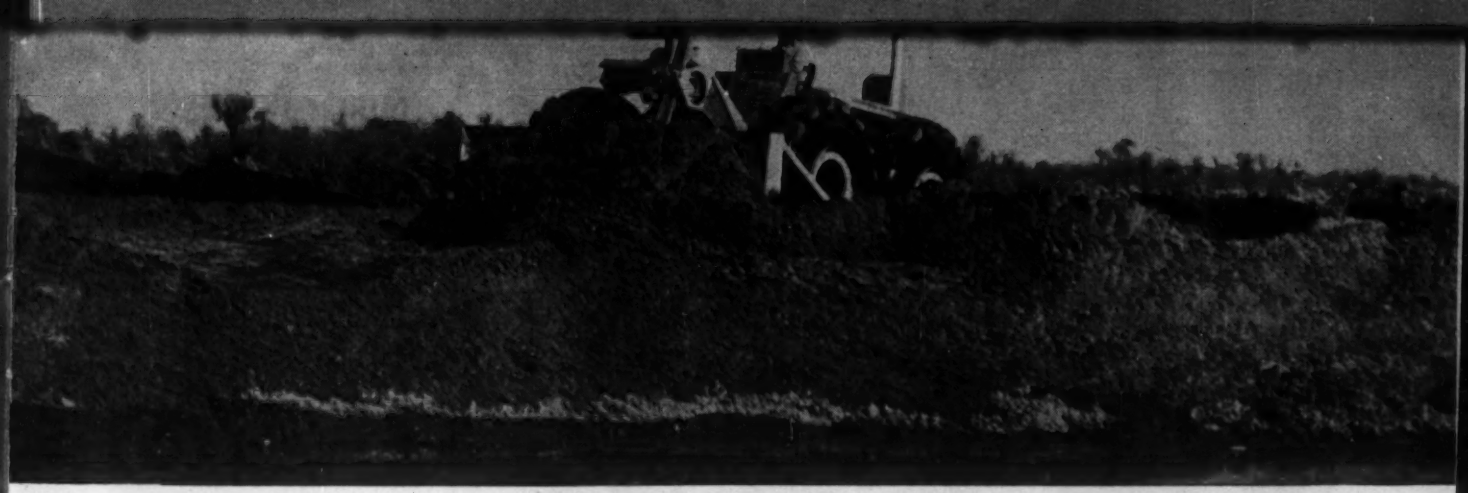
Saw Blade Cuts Close

A new idea for eliminating a very large amount of hand sawing, where it is necessary to saw flush or very close to studding, rafters, etc., is the basis of the design of the Barnes Blade. The blade is a specially built circular saw blade which fits on the No. 77 Skil Saw. Among its major uses are; flush cutting of door plates, at windows, door framing, studs, beams, floor joists, rafters; cutting into a wall; cutting in tight or confined spaces; cutting off ends of siding just installed; cutting off roof overhang; and cutting out a section of flooring. Several models of the blade will soon be available, but at present only a 7¼-in. dia unit will be marketed. Price is listed as $11.20. A specially-designed aluminum guard is also available for $2.85. The Barnes Blade Co., 16249 Colorado Ave., Paramount (Los Angeles County), Calif.



Wire Guard Protects Lights

Designed especially to permit use of fluorescent lighting in school gymnasia and special industrial applications, this welded wire guard combines light weight and strength to meet safety regulations. The guard requires no screws or other hardware for installation. Three retaining hinges clamp the guard firmly over the flanged edge of the reflector. On the opposite side, two wire clamps are released for bulb replacement. E. H. Titchener & Co., 67 Clinton St., Binghamton, N. Y.



Blythe Brothers, Morrison-Knudsen

cut maintenance with tractors-on-rubber

An ideal answer to the problem of excessive track maintenance is reported by officials of Blythe Bros. Company, Charlotte, North Carolina, and Morrison-Knudsen Company, Inc., Boise, Idaho.

These two nationally-known firms, on their million-yard joint venture at Alvin Callender Air Base near New Orleans, have replaced 148 hp crawler-type tractors with two 208 hp rubber-tired Tournatractors.

This job, with its continuous work in Mississippi River-bottom sand, proved a nightmare for the crawlers. Most of the time, it was necessary to replace pins and bushings and build up rails and rollers about every 900 operating hours. Each time the repair job was done, it cost about $2,000 per tractor.

Tires cut track rebuilding costs

Tournatractor tires have practically eliminated these troubles. These big single tires roll easily over the abrasive sand. In months of double-shifting, they have required no maintenance other than inflation.

Sand dumped by Tournapulls is dozed out over swampy ground. This is method contractors are using, together with dragline-stripping and side-casting of 7' of top muck, to fill an age-old cypress swamp. Sand — over 1,000,000 yards of it — is dredged from the Mississippi River and hauled in. It is so abrasive that crawler tracks require rebuilding every 900 hours.

High output is reported for Tournatractors, too. Pushing sand dumped by Tournapulls to fill over a swamp, they average a 300' dozing cycle every 32 seconds. Push forward is made in third gear (8 mph) . . . return in second (also 8 mph). The 150' dozing distance takes an average of 19 seconds . . . the 150' return, 13 seconds. Loads vary from 2 to 2½ cubic yards . . . output per 55-minute hour, from 200 to 250 cubic yards.

Travel 19 mph job to job

In spare time, Tournatractors make good use of their 19 mph mobility to handle odd jobs around the 4.7 square mile construction area. Units "run" everywhere . . . cross pavements, tracks without planking . . . travel up to 1,670 ft. per minute to do such odd-job assignments as cleaning the haul route. At times, units have also been used to pull 50-ton rubber-tired compactors.

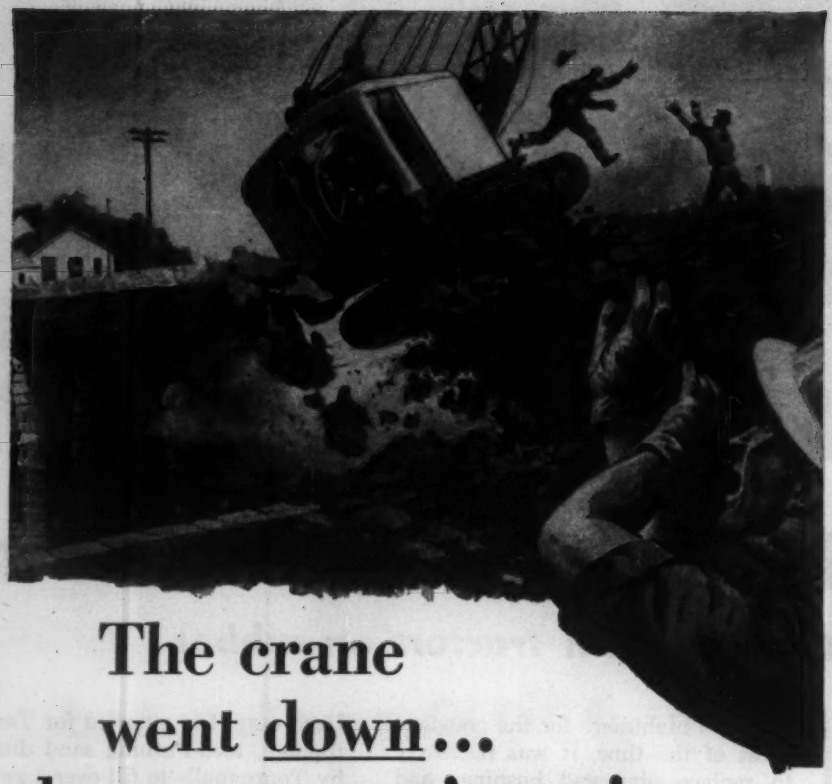
Let us show you what speed, plus elimination of track problems, can do for you. In sand, reduced maintenance alone can quickly pay for your Tournatractor. In less abrasive materials, you'll find one or two of these versatile tractors ideal for fast work all over the job site. Write today for new bulletin and specifications.

Tournapull, Tournatractor—
Trademark Reg. U.S. Pat. Off. T-813-A-b

LeTourneau-WESTINGHOUSE Company

Peoria, Illinois

A Subsidiary of Westinghouse Air Brake Company



The crane went down... but we weren't out!

Our Hartford Contractors' Equipment policy paid us $8,269.02 *(Based on Company File #HM53-2037)*

We were wrecking an old bridge to make way for a wider one.

The structure appeared sound. So we brought up our 32-ton crane, and used it for removing the bridge deck.

That wasn't such a bright idea. We'd hardly started when the abutment under the rig collapsed with a roar. The operator jumped clear as the machine toppled into the river.

It cost nearly $900 to get the machine to a shop for repairs. And over $7,300 more to fix it up. Under our Contractors' Equipment policy, the Hartford Fire Insurance Company paid these bills — a total of $8,269.02.

Who'd pick up the tab if one of *your* machines "fell in"?

Or was burned? Wrecked in a collision? Buried under a landslide?

Not you—if you had the broad protection of a Hartford Contractors' Equipment policy. It covers your equipment on the job . . . while being moved from one job to another . . . while idle between jobs. It saves you from loss caused by collision, overturn, explosion, theft, windstorm and many other hazards.

The cost of making sure you have cash when you need it for repairs or replacement is very reasonable. Get full details today from your Hartford Fire Insurance Company Agent or your insurance broker.

Year in and year out you'll do well with the

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Citizens Insurance Company of New Jersey . . . *Hartford 15, Connecticut*
Northwestern Fire & Marine Insurance Company
Twin City Fire Insurance Company . . . *Minneapolis 2, Minnesota*

PUBLICATIONS

• **Air-Line Lubricator**—Users of air-operated tools may be interested in the new bulletin on "Air-Line Lubricators". The lubricators described in the bulletin are made in sizes for use with the smallest hand-held air tools to large quarry-type drills. Pictures illustrating damage to various parts of drills due to improper lubrication are shown in this piece of literature.

A two-color illustration shows the construction and the metering device incorporated in this new unit. In operation the lubricator depends on the pressure differential created by air flow through the air passage. The Oil-IR as the manufacturer calls this unit, works on constant or pulsating air pressure and in any position. Automatic pressure equilization is said to prevent loss of lubricant when pressure is suddenly reduced or shut off. The quantity of oil feed can be adjusted as required by a metering valve.

Fixed air-line lubricators are available in 1, 2 and 12-qt sizes. A valve type lubricator is also available to be used with manifold installations on tunnel jumbos, to take care of a number of units from one main oil supply tank. A table on the back cover of the bulletin aids in the selection of the proper size lubricator for the machine or units in operation. Also shown are the physical and chemical requirements of rock drill lubricants. INGERSOLL-RAND, 11 BROADWAY, NEW YORK 4, N. Y.

• **School Lighting**—A 31-page booklet on lighting and electrical facilities for modern schools has been prepared.

Lighting is discussed in terms of requirements of each functional school area and the equipment that is available to meet these needs. Electrical systems for the school are discussed with emphasis on providing electrical facilities to give performance, safety and flexibility with economy of space and money. Photographs and sketches of actual installations are included to illustrate the systems available. Booklet B-6521. WESTINGHOUSE ELECTRIC CORP, P. O. BOX 2099, PITTSBURGH 30, PA.

• **Insulation**—A 4-page folder describes the recently introduced Duraface Foamglas. Duraface Foamglas is a new material which combines insulation and integral finish in a single block. A hard white crust is fused to one surface of the Foamglas block and the product makes possible the construction of an insulated and finished wall in one operation. The folder

8000 pay yards a day with 3 C Tournapulls

54 loads hourly on 1800′ cycles

J. H. BECKMAN Construction Company, Sioux Falls, South Dakota, regrading 270,000 yards for a secondary road near Alcester, reports that each of their 3 C Tournapulls were push-loaded with 13½ pay yards of sandy loam in about 1 minute. Haul, spread, and return of 1800′ took 1.8 minutes. "C's" accounted for 18 loads each per 50-minute hour. Combined hourly output for 3 machines was 729 pay yds.

15 trips hourly on 7600′ cycles

On another of Beckman's jobs, at Chamberlain, contractor states that 2 of his Tournapulls moved a total of 350,000 cu. yds. to construct coffer dams and 2 earthfill ramps for parallel bridges across the Missouri River. Each "C" here accounted for 5 trips (65 pay yds.) per 50-minute hour on one-way hauls that averaged 7600′.

Based on these and other experiences of the past 3 years, Mr. Beckman lists these 2 major advantages for the 3 electric-control C Tournapulls . . .

1. "Tournapulls are fast and very easy to move from job-to-job," says Mr. Beckman. "There's no need to load them on trailers as we must do with track-type equipment and scrapers." Self-powered job-to-job moves of 250 miles rarely take more than a day.

2. Tournapulls outproduce other equipment on nearly all hauls. Their maneuverability (180° turns in 30′) and quick acceleration help them beat crawlers on short hauls . . . their ability to accelerate fast and to go through mud enables them to beat other rubber-tired machines on medium and long hauls. Output per 11-hour day on 2000′ cycles "averages 8000 pay yards for the 3 Tournapulls," according to contractor Beckman.

One of his operators, Bruce Stewart, says, "Tournapulls are very easy to operate. They're fast, dependable . . . pick up the dirt fast, move fast, and spread fast."

All-around production speed and ability to travel fast between jobs can boost your profits, too. You've probably read other on-the-job reports from many contractors who have found this out. Why not check Tournapull in action on *your* job? Ask for a demonstration.

Tournapull—Trademark Reg. U.S. Pat. Off. P-588-H-b

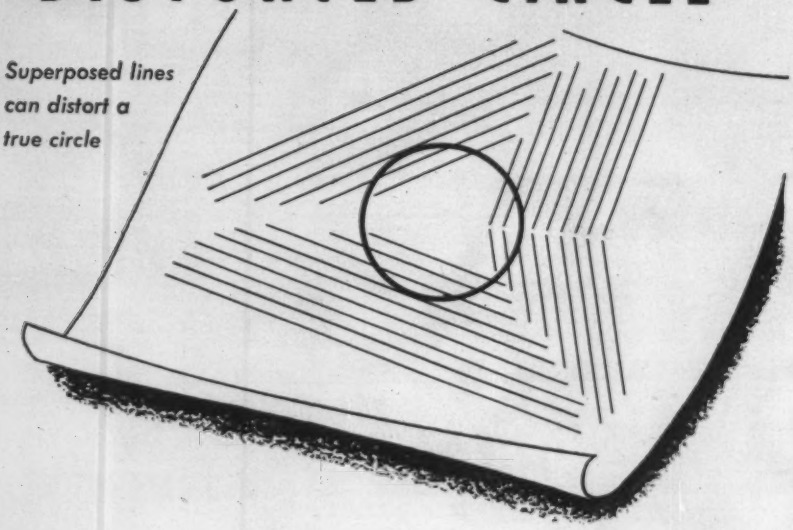
LeTourneau-WESTINGHOUSE Company

Peoria, Illinois

A Subsidiary of Westinghouse Air Brake Company

The Strange Case of the DISTORTED CIRCLE

Superposed lines can distort a true circle



Arkwright Tracing Cloth Produces Clean, Concise Lines and Circles

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ARKWRIGHT'S GREATER TRANSPARENCY means clear, ageless permanency — no fading or discoloring.

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PUBLICATIONS

describes the manufacturing process, lists physical properties and details the sizes available. PITTSBURGH CORNING CORP, 1 GATEWAY CENTER, PITTSBURGH 22, PA.

• **Air Compressors**—A 12-page catalog pictures all of the 40 models of LeRoi portable type compressors available. A quick reference chart shows the contractor the capacities, engine types and mountings available. The bulletin also illustrates features of the compressors such as: replaceable cylinder sleeves; interchangeable valve parts; aircraft type compressor cylinders; heavy duty industrial type engines; and magneto ignition on all gasoline models. Catalog CG-9A. SALES PROMOTION DEPT, LEROI DIV, WESTINGHOUSE AIR BRAKE CO., 1706 S. 68TH ST, MILWAUKEE 14, WIS.

• **Vault Doors**—How the Century vault door lends itself to architrave treatment is described in a new 4-page brochure prepared for bankers and architects. The folder highlights designs styled by industrial designer Henry Dreyfuss to harmonize with modern bank interiors. Illustrated are installations for low and high ceilinged rooms and for marble, mirrored, walnut or oak paneled walls. MOSLER SAFE CO, 320 FIFTH AVE, NEW YORK 1, N. Y.

• **Glass Blocks**—An 8-page catalog, "How to Modernize Old Windows with PC Glass Blocks," demonstrates with photographs and drawings the specific benefits of a window modernization program in terms of lower maintenance and operating costs, better daylight and a more modern and efficient plant. The booklet also illustrates how to select the proper functional glass block for use in various window exposures and where the plant location presents such problems as extreme brightness and glare. PITTSBURGH CORNING CORP, 1 GATEWAY CENTER, PITTSBURGH 22, PA.

• **Forms for Sewage Plants**—How Uni-Form panels can help reduce concrete forming costs on sewage treatment plant construction is illustrated and described in a 4-page folder. In addition to the folder a set of several engineering drawings show the application of the system as applied to sewage treatment plant construction. Job photographs and job drawings cover circular tanks, Y-walls and other structures that comprise a sewage treatment plant. UNIVERSAL FORM CLAMP CO, 1238 N. KOSTNER AVE, CHICAGO 51, ILL.

"Always give top performance regardless of job conditions"

That's contractors' valuation of the 18 Tournapulls used to level million-yard shopping center

Grantwood Contracting Company, Inc., and C. T. Wilson Construction Company, both of St. Louis, Missouri, jointly contracted 1,000,000 yards of land-leveling for the 62-acre Northland Shopping Center near St. Louis. To move this total in the allotted 78 days, they brought in 4 electric-control C Tournapulls, 14 Super C Tournapulls, a rubber-tired Tournatractor, and 5 crawler tractor-drawn scrapers.

4 "C's" average 4,585 yds. daily

On the job, each of the 4 electric-control "C's" completed a 3600′ cycle in less than 4 minutes. Units averaged 13 pay yards of clay and rooted sandstone per load . . . 13 loads each per 50-minute hour. Output for 4 rigs per 40-hour week averaged 22,925 pay yards over 2600 to 3600′ cycles.

1/3 yardage moved in 1/5 allotted time

In the first 17 working days, entire dirtmoving fleet, including the 18 Tournapulls and 5 crawler-scraper teams, moved about 200,000 yards. The 4 electric-control Tournapulls, representing 17% of the equipment fleet, moved 37% of this yardage.

Says Arthur Bodine, operational job superintendent for Grantwood Contracting Company and C. T. Wilson Construction Company, "Our electric Tournapulls always give us top performance, regardless of job conditions, good going or bad. Maintenance on electrical systems is negligible. Constant-mesh transmission and torque converter are very big assets on the job."

Find out more

Before *you* bid *your* next job, ask to see figures on Tournapulls. Their speed (up to 40 mph), short turn radius (12′8″), and versatility (same prime-mover powers rear-dump, bottom-dump, crane, and flatbed) can be important factors in cutting your costs. Why not check further?

Production for 4 electric C Tournapulls on 2600′ to 3600′ cycles

MATERIAL — soft clay with some sandstone
PUSHERS — 186 hp rubber-tired Tournatractor, 180 hp crawler

DAY	TOTAL LOADS (8-hour shift)	AVERAGE LOAD (pay yards)	TOTAL OUTPUT PER DAY
MON	400	13 yards	5,200 yards
TUES	412	13 yards	5,356 yards
WED	355	*11 yards	3,905 yards
THURS	276	13 yards	3,588 yards
FRI	375	13 yards	4,875 yards
TOTALS	1,818		22,924 yards

*Material moved mostly sandstone.

Tournapull—Trademark Reg. U.S. Pat. Off. Tournatractor—Trademark PT-606-B-b

LeTourneau-WESTINGHOUSE Company
Peoria, Illinois
A Subsidiary of Westinghouse Air Brake Company

IN THE AGGREGATE,

Here's U. S. Rubber belting hauling aggregate for Chief Joseph Dam

You're looking at one of the biggest aggregate plants ever set up. It supplies aggregate for concrete for the big Chief Joseph Dam in the State of Washington—the dam that will have the world's largest single-unit powerhouse under one roof, the dam that will rank second only to Grand Coulee in operating capacity.

This aggregate ranges from fine sand to heavy boulders as large as 20″ in diameter. The rock breaks clean, leaving sharp edges which are good for concrete interlock but bad for ordinary haulage conveyor belting. To handle this most critical portion of the haulage, United States Rubber Company conveyor belts were selected. Now in their fifth construction season, the belts are still going strong, giving *trouble-free* service. This is another instance of U. S. Rubber's Three-Way Engineering Service: "U. S." belt engineers work with the designers of the conveyor system and the engineers of the dam—to make sure of providing the *right* belt.

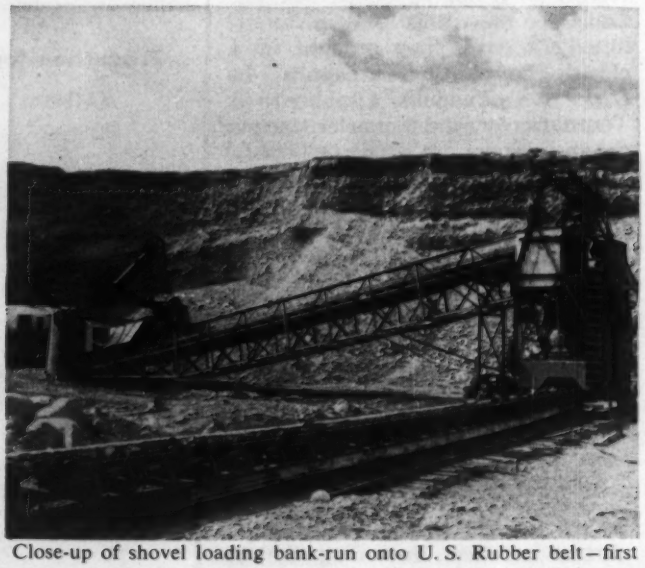
U.S. Belting and Engineering Services are obtainable through any of the 27 "U.S." District Sales Offices, or write to the address below.

CLOSE-UPS OF SOME OF THE CRITICAL POINTS

"U. S." Research perfects it

"U. S." Production builds it

U. S. Industry depends on it.



Close-up of shovel loading bank-run onto U. S. Rubber belt—first step on its journey throughout the aggregate plant.

US RUBBER

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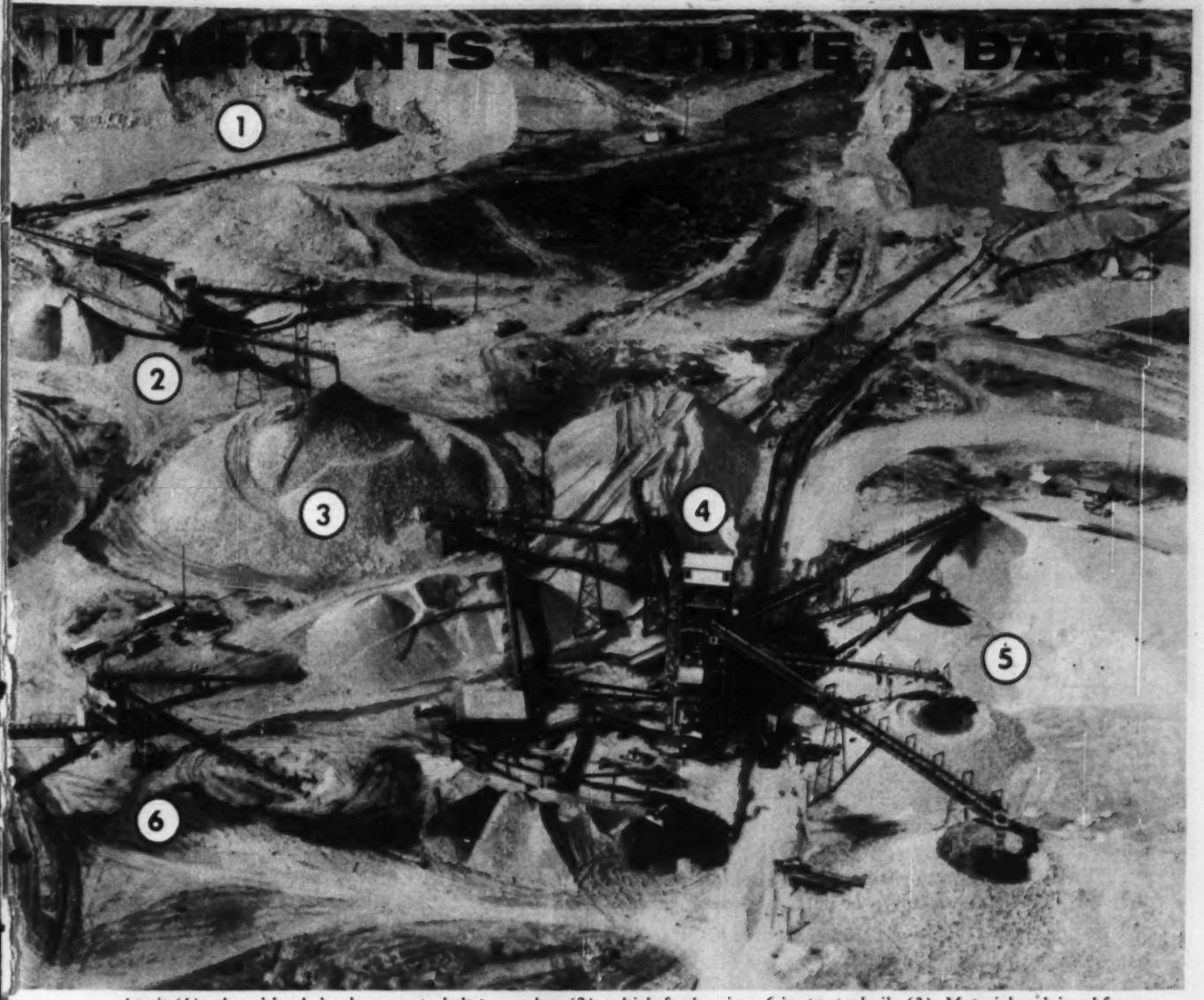
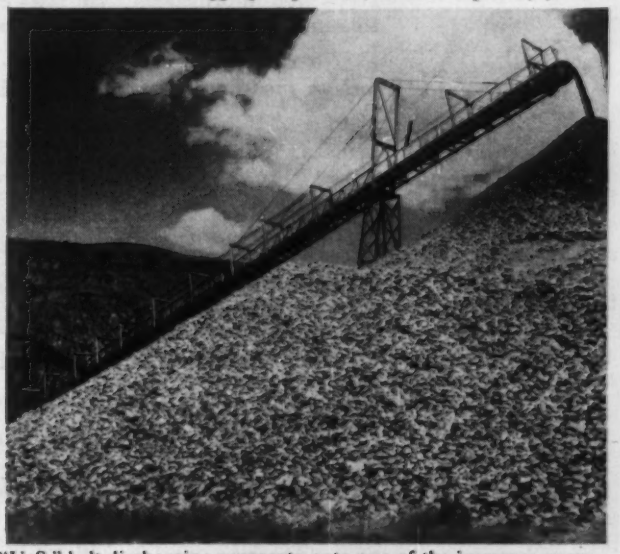


At pit (1)—shovel loads bank-run onto belt to crusher (2), which feeds minus 6-in. to stockpile (3). Material reclaimed from stockpile goes to top of screening tower (4), from which conveyors radiate to coarse-aggregate piles (5) and sand piles (6).

Note large and jagged aggregate on "U. S." belt. The belt starts the material from the pit to the rock plant.



"U. S." belt discharging aggregate onto one of the immense surge piles.

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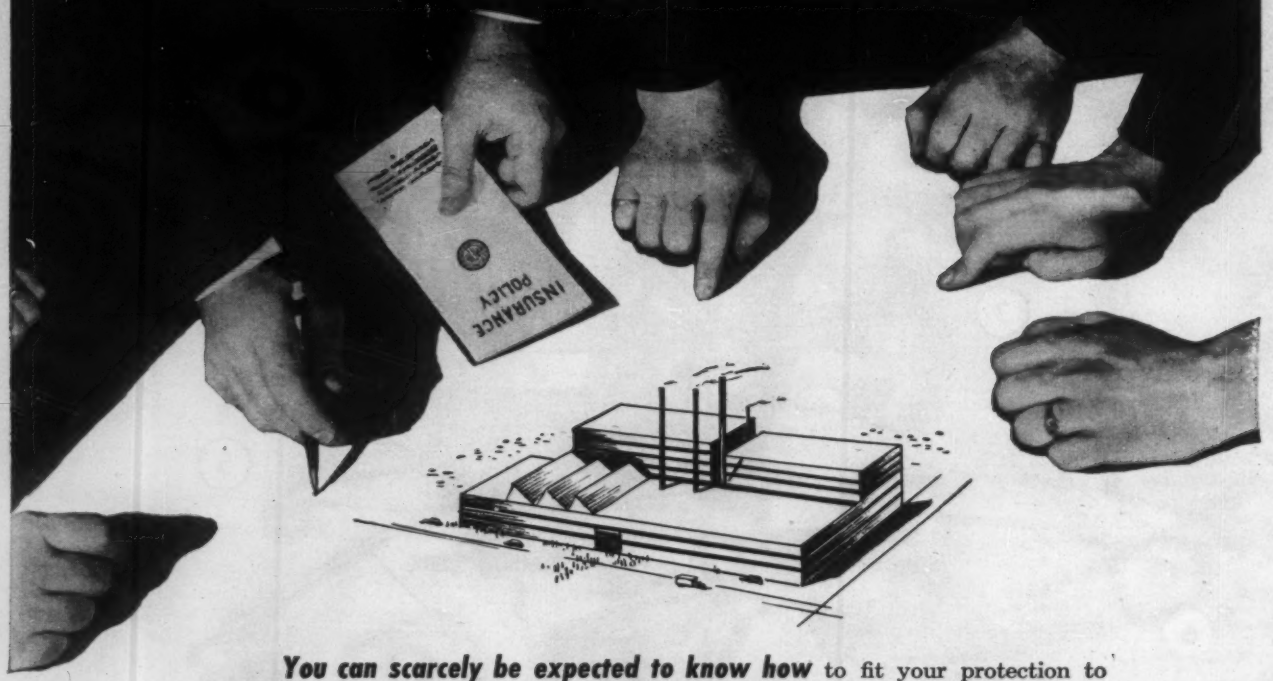
YOUR BUSINESS PROTECTION OVERSEAS

calls for Expert Planning



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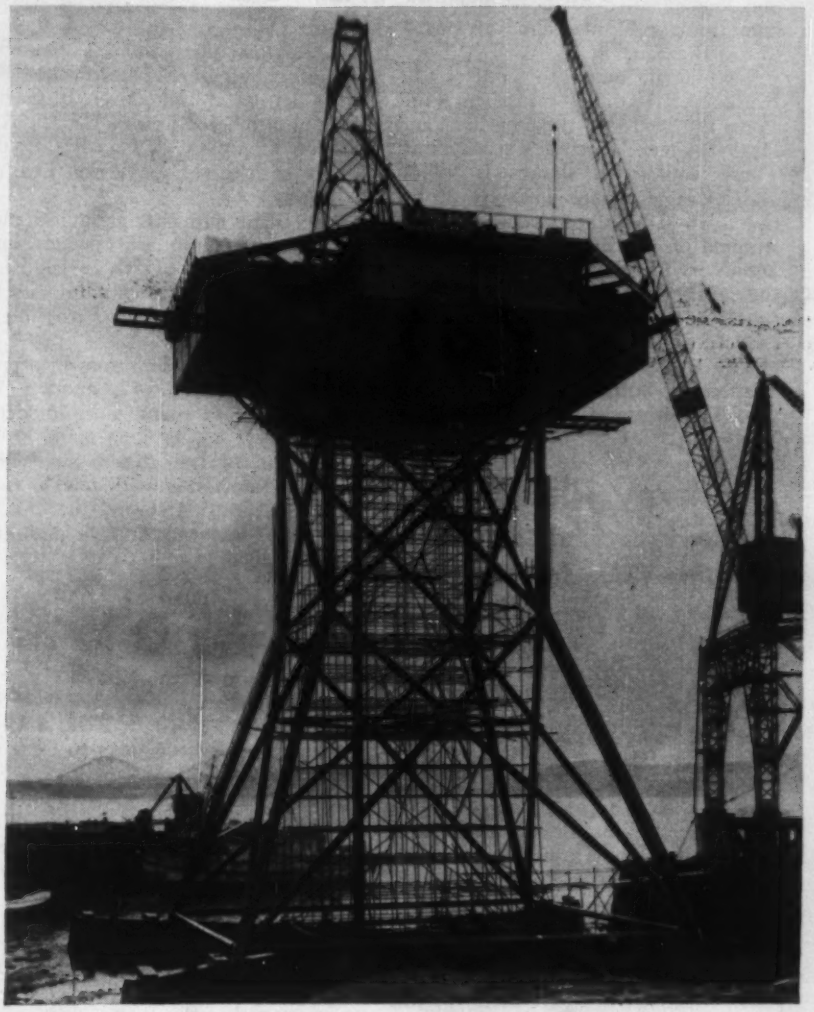
An association of 24 American capital stock fire, marine and casualty insurance companies providing insurance protection in foreign lands

For the LOW BID on any job,



TUBULAR STEEL on sea boring tower reduces weight and wind and water resistance. Forth Bridge in hazy background is a 19th century structure that employed tubular steel.

Sea Boring Unit Built of Steel Tubing

A complex problem in tubular steel construction was presented in the erection of a tower to be used in offshore drilling of test bores in Britain's search for additional coal sources.

Tubular steel was selected since the tower, when in place, will be subjected to action of wind and sea. Further, a substantial reduction in weight —as compared with orthodox structural steel methods—was made possible. Tubes of large diameter—15 to 24 in.—were used to reduce the number of members required; a total of 90 are used—64 in compression 26 in tension.

The tower is 80 ft square at the base, tapering to 40 ft on a side 68 ft above the base. The 40-ft square section extends upward another 60 ft, but 20 ft from the top, additional members branch out to support the girders which form the working deck.

The working deck is octagonal and measures 86 ft across. On it is a 50-ft high derrick and suspended below it are accommodations for the drilling crew.

Each leg of the tower rests on top of a box girder base set in cruciform. Each of the cross' sections is a double box girder 165 ft long, 7 ft high and 3 ft wide; weight of the four sections totals 80 tons.

When the tower is to be towed to a drilling site, the airtight sections are filled with compressed air to counteract the head of water above the base. When in position on the sea bed, the sections are flooded to provide additional stabilizing weight.

The tower is the first of its kind and in many aspects is unique. There are 24 multi-branch joints where from four to ten tubes meet. At the four corners where the tower legs are bolted to the base, each joint has five branches composed of one 24-in., two 18-in. and two 15-in. tubes. The first named three, the compression members, are flanged and bolted to the joints while the tension members have double-jawed heel pieces which are pinned to a single heel piece on their respective joints.

The four main 24-in. members run up to joints 66 ft above where there are six branches from each joint—two for the 24-in. members, and four for the 18-in. members which taper to 16 in. at the joint. The tubes are tapered to permit the branch stubs to be joined with the large diameter tubes with good welded connections.

The main branch joints have special internal plate diaphragms welded in to stiffen the fittings against the loads imposed by the branch connections. Further, the ends of all the joint stubs and tube members are sealed off with steel plates to prevent corrosion, and, since they are designed to be placed in 80 to 120 ft of water, all were tested at pressures from 50 to 100 psi, depending on the diameter of the tube.

Two pontoons, each 170 ft long, 17½ ft wide and 7 ft high, have been constructed to float the 600-ton structure to the drilling sites. Electrically operated winches will be used to raise and lower the structure.

Consulting engineers were Maunsell, Posford and Pavry of London who had considerable experience during the war in the construction and installation of sea forts around the British coast. The general contractors were the Cleveland Bridge and Engineering Co, Ltd. of Darlington, and Tubewrights, Ltd., London were appointed to produce the tubular members and the multi-branch junction pieces.

Diversion of Alberta's Pembina River Is Planned

Alberta government engineers have disclosed plans for beating the flood menace in the Pembina River Valley through a project calling for diversion of the Pembina to the Brazeau River.

F. L. Grindley, director of water re-

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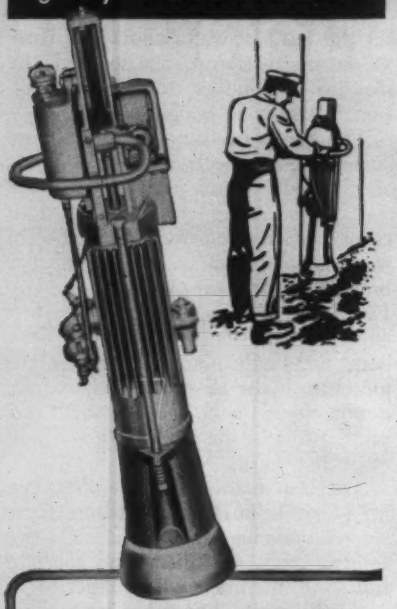

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sources of the Provincial Water Resources and Irrigation Department, said it is planned to divert the Pembina through Dismal Creek tributary to the Brazeau.

Two small dams to control the Pembina River flow would be built along the route of the Pembina and Dismal Creek at strategic locations. These would cost about $1 million each. A large storage dam costing between $8-$10 million would be constructed on the Brazeau.

Surveys first must be completed of the entire area before construction starts, he pointed out, and this may take from two to three years.

The project probably will be financed by both the federal and provincial governments under the Canada Water Act.

Highway Plan Lags

Lack of funds delays bid advertising in Costa Rica

Mr. M. Harshberger, director of U. S. Bureau of Public Roads operations in Costa Rica, has reported that Costa Rica's failure to obtain the necessary matching funds may delay the advertising for bids on that section of the Inter-American Highway. They had been scheduled for September 15th.

Under the appropriation granted for the Inter-American Highway program, local countries must contribute one dollar for every two provided by the U. S. and work cannot progress until the local funds are available.

Costa Rica has asked for a loan from the Export-Import Bank for this purpose, but there has been no official approval as yet. Costa Rica is inelligible for aid from the World Bank due to the fact that there are defaulted international obligations outstanding.

If Costa Rica is successful in its negotiations with the Ex-Im Bank this month, bids from private contractors will be asked on or about October 1st, Mr. Harshberger stated.

Altogether, five contracts will be let with approximately $27 million scheduled to be expended on the project in Costa Rica during the next three years.

U. S. Bureau of Public Roads officials state that they are anxious to advertise and obtain bids as soon as possible and to let the contracts in order that the successful contractors can start work at the start of the dry season sometime in November. Heavy tropical rains during almost six months of the year in Costa Rica slow highway construction considerably.

Vancouver to Get $5 Million Plant, Bids Will Be Called

Bids will be called toward end of this year for construction of a sodium chlorate plant on the north shore of Burrard Inlet at Vancouver, B. C. for the Toronto-based firm of Electric Reduction Company of Canada, a subsidiary of Albright & Wilson Ltd. of England.

The plant will cost about $5 million, according to the owner, and about $1¼ million of this is slated for construction of the building itself. The remainder will go for machinery and equipment.

As soon as the plant goes into production, early in 1957, another $1 million will be spent on immediate expansion.

Clearing of the 20-acre site is to start "almost immediately," and should be finished toward the end of this year when bids for the building will be called.

$70 Million Will Cure Johannesburg's Traffic Ills

Johannesburg, the largest city in Southern Africa, has just received the report of Mr. Lloyd B. Reid, a U.S. traffic consultant, on ways to clear up its traffic congestion.

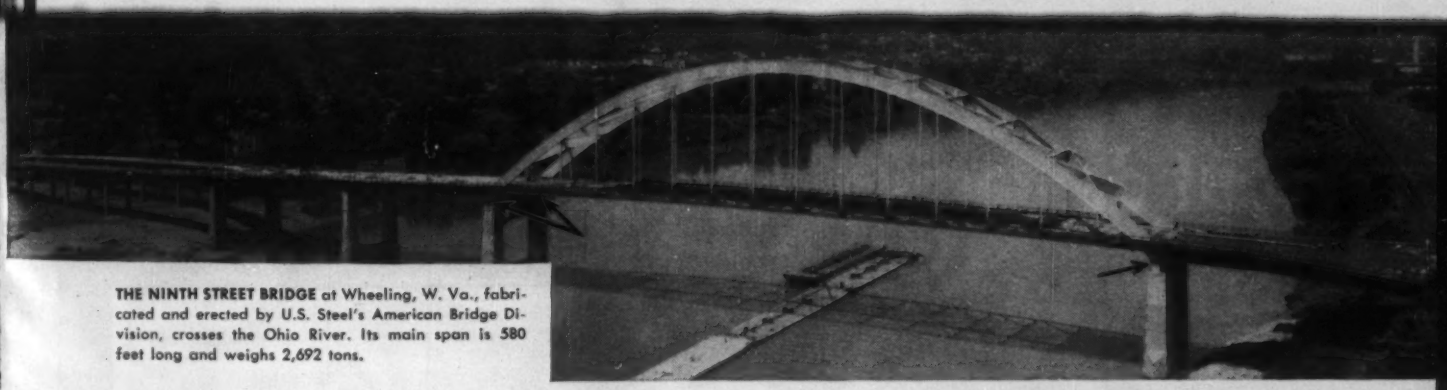
The report advises the building of expressways and parking facilities which will cost an estimated $70 million in the first stage and another $22 million later.

The biggest single undertaking will be an expressway costing $34 million which will extend north-south through the city. At present traffic is so congested in the center of the town that the average rate of travel is less than 7 mph.

International Briefs

• **Irrigation in Peru**—The Peruvian Senate has authorized the government to borrow up to $20 million to undertake irrigation projects. The main project will be to complete diversion of the Orcococha and Choclococha lagoons from the eastern watershed of the Andes to the Ica River Valley on the western slope.

• **Harnessing Loch Waters**—Scotland plans to harness waters of Loch Glashan (in Argyll) to produce some 17,600,000 units of electricity annually. The $3.5-million scheme calls for construction of a 1,100-ft-long and 45-ft-high dam at the outlet of Loch Glashan. A 5,500-ft tunnel and pipeline will bring water to a 4,200-kw power station on the shores of Loch Gair.



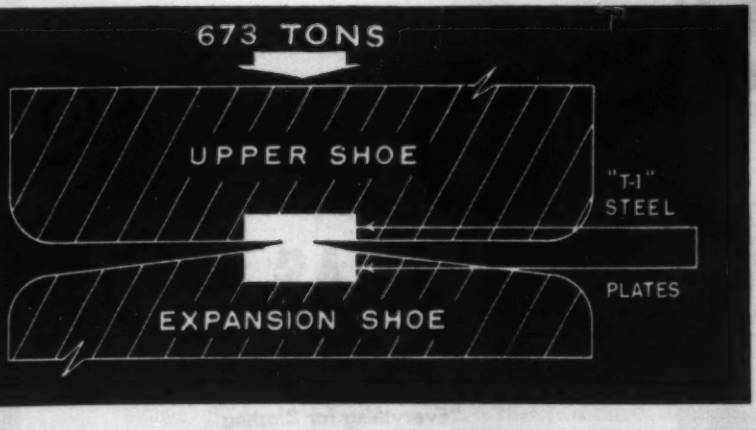
THE NINTH STREET BRIDGE at Wheeling, W. Va., fabricated and erected by U.S. Steel's American Bridge Division, crosses the Ohio River. Its main span is 580 feet long and weighs 2,692 tons.

2,692-ton bridge "see-saws" on 4 knife edges of USS "T-1" steel!

The main arch of the Ninth Street Bridge at Wheeling, W. Va., stretches 580 feet over the Ohio River. The entire weight of this 2,692-ton span rests on 4 thin edges of USS "T-1" steel.

This main span has four arch shoes, each supporting 673 tons. At the greatest point of stress in each shoe is a thin plate of "T-1" steel, machined to a shallow knife edge. "T-1" steel was chosen because it has a minimum yield strength of 90,000 psi, and long life under extreme atmospheric conditions.

On bridge jobs of all types, use "T-1" steel where very *high stresses* are involved and where you need weldability without pre- or post-heating. "T-1" has excellent *impact resistance* at low temperatures. Its very high strength (105,000 psi minimum) makes it ideal for gusset plates, structural members and other component bridge parts.



THE ENTIRE MAIN SPAN rests on four arch shoes like this. Two plates of "T-1" steel are pressed into the heart of each shoe at the contact point. "T-1" steel's 90,000 psi yield strength enables it to withstand the high stress.

LIKE A "SEE-SAW." As the bridge expands laterally, the upper shoe rocks over slightly to relieve expansion stress. The plate in the lower expansion shoe has been machined to a knife edge and acts as a fulcrum for the rocker movement of the upper shoe. This knife edge of "T-1" steel supports 673 tons.

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USS "T-1" CONSTRUCTIONAL ALLOY STEEL

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UNITED STATES STEEL

Controlled blasting ditches Schuylkill without damaging adjacent construction

A railroad right-of-way along the shore. A high voltage power line overhead. A residential neighborhood and industrial buildings close by. These were the problems facing United Engineers and Constructors, Inc., of Philadelphia, in this tricky river crossing job.

In this controlled blast—almost directly underneath the power lines, and on the side near the railroad—water flies high but rock throw is held to a minimum.

Another controlled blast on the same job. Waterworks and other buildings less than 75 feet from the blast area. Water blanket raises but rock

In laying a 20-inch concrete pipeline under the Schuylkill River for the Philadelphia Electric Company, United Engineers and Constructors, Inc., Philadelphia, faced several tough problems.

The pipeline, which will provide the city of Phoenixville with water taken upstream from Philadelphia Electric's huge new Cromby Station, runs directly under high voltage power lines, right next to the main line of the Reading Railroad, and right up to the municipal water works. Conditions like these required extreme control of both throw and vibration.

By careful attention to spacing, powder factor, initiation, and size of blasts, control was so successful that absolutely no damage was caused by blasting operations. Test shots determined the largest blasts practical ... and the contractor was able to blast each section efficiently and safely.

Atlas 60% gelatin was used throughout the job. Typical blast was 32 holes, 10 feet deep, with an average of 15 lbs. of explosives per hole.

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"Civil engineering has more to offer today than ever before," says Enoch Needles.

Boss of 1,200-Man Firm to Head ASCE

Enoch R. Needles—principal partner in Howard, Needles, Tammen & Bergendoff assumes presidency of the American Society of Civil Engineers next week. As head of one of the nation's largest consulting firms, a leading organization in the expanding field of highway engineering, ASCE's new president is a magnate among consultants.

Ascending to the Society's top office from a term as vice-president, 67-year-old Needles caps a long career of professional service that has not gone unrecognized. He alerady has been elevated to the presidency of both the American Institute of Consulting Engineers (1946) and the American Road Builders Association ('49-'50). For a consultant to be president of ARBA was a real distinction; it is an organization in which consultants do not predominate.

Assuming now the presidency of ASCE, and figuring to spend at least one-third of his next year at the job, Enoch Needles confidently can expect his firm's business to keep moving smoothly. The six other partners of the New York and Kansas City firm each have put more than 20 years into building the experience and reputation of an organization that has momentum to spare.

Moreover, Howard, Needles, Tammen & Bergendoff was in on the ground floor for the post-war burst of toll-road construction and has grown apace with it. Today with its enviable position in big-scale highway consulting practice, the firm is prepared for whatever national highway program finally comes out of the nation's need to double its present effort.

• **Firm had head start**—Enoch Needles says that two things about its practice have put HNTB where it is today. Since it was strictly a bridge design outfit in the '20s and '30s, it very early in the game became acquainted with toll financing and revenue bonds. And then its wartime experience at managing large projects done by pooled organizations of engineers, architects and contractors has paid off.

Going back over his own experience, Needls recalls that his own first major assignment, after four years in Kansas City with Harrington, Howard and Ash, the predecessor firm, was as resident engineer on the toll crossing of St. John's River in Jacksonville, Fla., in 1921.

When in 1922, he came alone to New York to a desk at 55 Liberty Street, he represented a Kansas City firm already associated with toll bridges and already known to Wall Street.

By 1928, it became Ash, Howard, Needles & Tammen, gaining fame for bridges over the Missouri, Neches, Schewsbury, Passaic and Raritan rivers —plus four over the Mississippi. The firm's ability to know a sound job, recalls Needles, helped it to be able to pick and choose the good ones.

less than 75 feet from the blast area. Water blanket raises but rock stays low.

RARE OCCASION—Needles meets with Charles Clarahan, Ellis Paul (left) and Elmer Timby (right). With projects and partners scattered all over, his management conferences are not usually even this big. More commonly they are just lunch dates.

Depression cut down on the toll-project work, but brought the Public Works Agency into being. From 1934 to 1940 Needles' firm was well established with the PWA and RFC and designed and supervised many bridges of importance.

In 1940 the present firm name was adopted, and while the organization switched to wartime design of military installations, Colonel Needles put in a tour in and out of the Office of the Chief of Army Engineers, concerned mostly with redistribution of construction materials and equipment.

• **War experience helped**—Needles sees great value in the wartime experience of consulting firms, in which they often joined forces, pooled resources, on a project. He thinks that the present-day pooling of engineering talent, such as has become common in big toll-road projects, would never have been thought possible before World War II. And he is as certain that the same pooling could make possible any large national highway program.

A postwar shift from toll bridges to toll roads was but natural evolution. From figuring feasibility of a bridge to feasibility of highways was but a short hop, quickly taken.

• **Enter the toll-road**—With the Maine Turnpike in 1946, the firm came up with the first fully self-supporting road (the Pennsylvania Turnpike finished earlier had both PWA and RFC money in it). This was the firm's big break, for with the Maine Turnpike, out came the plug and the torrent of plans for turnpikes to follow.

BUSY DRAFTING ROOM on one of the seven floors firm fills in New York office.

With toll-road work in Maine, Massachusetts, New Jersey, Florida, Ohio, Colorado, Kentucky, West Virginia, Kansas and Texas, HNTB has had business in more than half of the 18 states that now have either toll-roads or feasible toll-road plans in the works.

Starting with the New Jersey Turnpike, HNTB assumed the role of general consultant over a "pool" of consulting firms, each assigned responsibility for a section of road. This capacity has been repeated in every instance except in Ohio where the firm has the subordinate role of "section" engineer. The Maine and Colorado toll-roads it handled alone.

Enoch Needles' firm, perhaps more than any other, has profited from two economic facts: taxpayers have been unwilling to pay for the engineering and construction of needed roads; tollpayers have been most willing to pay for certain routes. This situation, leading to revenue bond financing, to some extent has taken highway engineering out of the state highway departments, where engineers' salaries can't command the talent needed, and put it in the consulting offices, where it can be done at mass-production rates of speed. HNTB has reached a point where—with its toll-road work plus its

(*Continued on page 88*)

AIR POWER *speeds trenching jobs*

faster work..... lower costs

DIGGERS—One man operating an Ingersoll-Rand Digger loosens more material than six or eight men using ordinary hand methods. Six sizes are available, ranging in weight from 19½ to 37⅝ pounds.

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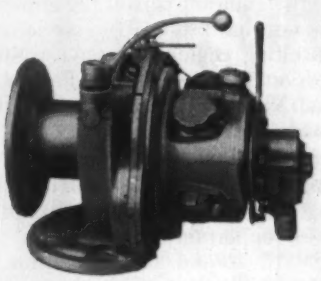

UTILITY HOISTS—Ingersoll-Rand's Utility Air Hoists are used effectively for backfilling, pipe and material handling. These Hoists can be mounted in any position—pole and column mountings are also available. There are twenty sizes having single line capacities up to 3500 pounds. Capacities may be increased many times with sheave blocks.—A little air goes a long way with these popular Hoists.

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Ingersoll-Rand's latest rotary, portable Air Compressor—Four models—105, 210, 315 and 600 cfm at 100 pounds full rated air pressure.

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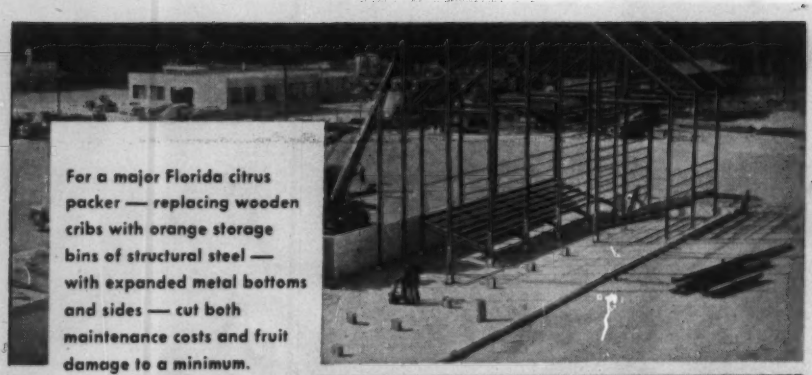
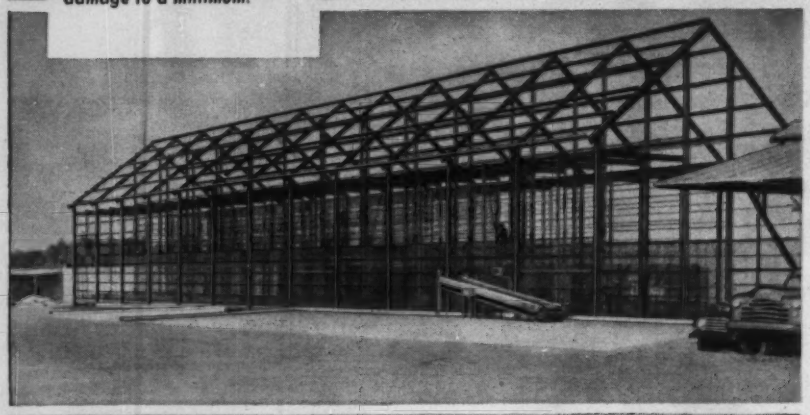
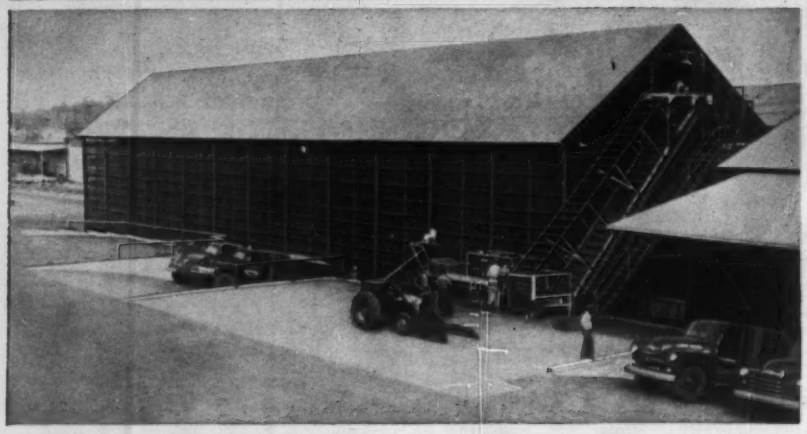


For a major Florida citrus packer — replacing wooden cribs with orange storage bins of structural steel — with expanded metal bottoms and sides — cut both maintenance costs and fruit damage to a minimum.





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work with states on other than toll roads—the firm might be considered an important adjunct to the functioning of highway departments in almost a score of states.

• **1,200 men, 7 partners**—To provide this type of service, HNTB has a 1,200-man force, out of which responsible individuals are assigned to give personal attention to but one project at a time. When Harry Tammen retired in 1950 an 8-man partnership was organized to include, with Needles and Ernest Howard who died in 1953: Ruben N. Bergendoff, Josef Sorkin, and Theodore J. Cambern in Kansas City; Ellis E. Paul, James P. Exum, and Elmer K. Timby in New York.

In and out of the main offices, a very vital second echelon of management functions: Leon in Massachusetts, Watkins in Maine, Larson, Dill, Wilcox and Miller in New Jersey, Peterson in Florida, Erb in Ohio, Humphrey in Kentucky, Keeling in Kansas, and so on.

As for Enoch Needles himself: "I sort of pay a little attention to the Jersey Turnpike."

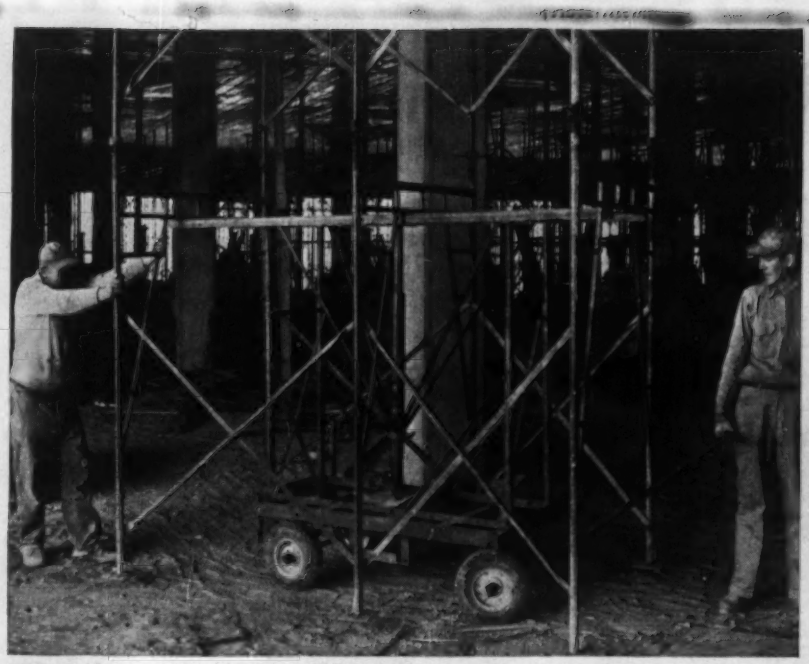
A very significant part of the growth of this firm has been in the extension of consulting engineering service into supervision of construction. Probably 50% of Needles' 1200-man force is in the field.

• **Is bigness bad?**—Does growth of consulting to such size as his operation diminish opportunities for a man to go upward toward the top? Enoch Needles thinks not. He points out that one key man is but 29 years old. "And he's responsible for a lot more dollars worth of work than I was at that age; I was 31 when I had a similar responsibility on a much smaller job."

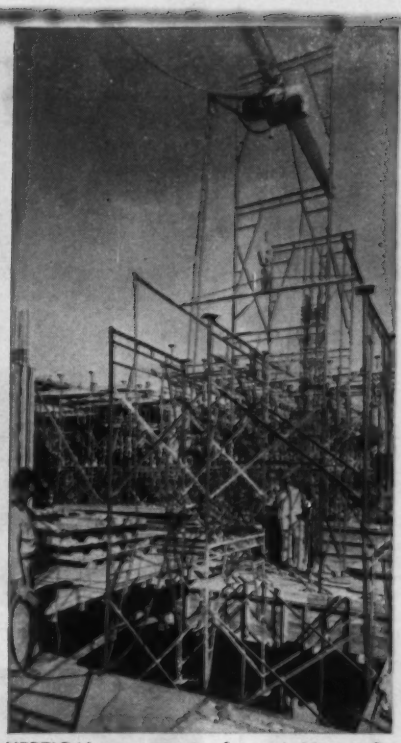
Needles thinks civil engineering has more to offer today than ever before and stresses his firm's constant search for men to assume the responsibilities of this profession.

Of course, he points out, not all in the profession can reach the top; he likens the screening out process to the membership grading done by ASCE. The grades of membership setting up what he calls a "democratic aristocracy" in the construction industry, are considered by him to be a good thing.

Enoch Needles, boss to some 1,200 engineers in his employ, gets to head the 38,000-member American Society of Civil Engineers starting next Wednesday at the business session of the annual convention which will continue throughout the week in New York City.



HORIZONTAL movement of three, two-frame high section of "Trouble Saver" Shoring to new pour area on the same floor is done with dolly equipped with pneumatic wheels and hydraulic jack. PS Co. supplied 4,730 5"-wide, 6'6" high frames for this multi-level shoring job.



VERTICAL movement of same 30 sq. ft. "Trouble Saver" Shoring sections from floor to floor is accomplished with an electric hoist mounted on a monorail. Shoring sections are raised through escalator shafts and stairwells and released to a second dolly working that level. As shown, other "Trouble Saver" frames were used to support monorail.

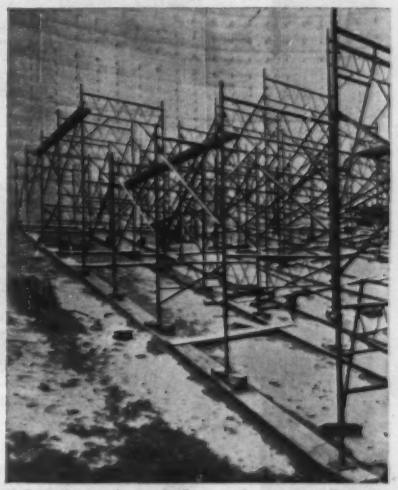
Sections of Steel Shoring Rolled, Lifted to Next Pour

IN ANAHEIM, CALIF., general contractor Ford J. Twaits Co. cut job time as much as 25 percent on the three-story, 330 ft. x 216 ft. Broadway-Hale department store by moving completely assembled sections of "Trouble Saver" Sectional Steel Shoring both horizontally and vertically. Here's how it was done:

(1) The 5 ft. wide "Trouble Saver" end frames and diagonal crossbraces, supplied by PS Co., were assembled on the ground floor of the building. Maximum spacing between frames was 5 ft. The load bearing strength of each section was more than adequate for supporting the 8 in.-thick floor slabs. (2) After pours, the 30 sq. ft. shoring sections were transported horizontally to new pour areas on dollies equipped with 14 in. pneumatic wheels and a hydraulic jack. (3) When the next story was ready, the shoring sections were wheeled to escalator shafts or stairwells and raised to the next floor by a monorail-mounted electric hoist. The sections were again set on a second dolly and wheeled to the next pour area. After pours, the shoring sections were lowered from the forms by means of 20 in. extension legs.

The fact that "Trouble Saver" Sectional Steel Shoring could be moved with a minimum disassembly and assembly permitted unusually big pours of 550 to 660 cu. yd. at rates up to 93 cu. yd. per hour.

Across the country at the Jersey City Sewage Treatment Works, Jersey City, N. J., Garden State Constructors and Associates showed further proof of the versatility of "Trouble Saver" Sectional Steel Shoring by using it to shore a 32 ft.-high x 12 in.-thick roof slab from a difficult, cone-shaped floor. The unusual floor condition was overcome by using end frames of various heights and doing the final, close leveling with the 20 in. adjustable legs atop frames. Detailed information on "Trouble Saver" Sectional Steel Shoring and other modern steel shoring methods can be found in Bulletin PSS-33, available at no obligation from The Patent Scaffolding Co., Inc.



CONICAL shaped floor of a 100' dia. digestion tank from which a 32'-high x 12"-thick concrete roof slab must be shored serves as base for "Trouble Saver" Sectional Steel Shoring. The floor dips to 12'6" below the bottom of the wall at the center. 2', 3', 4', 5' and 6'6"-high frames were used with standard braces for 5' spacing to provide level shoring. Rows of frames were placed 2'6" apart on braced wood sills. Garden State Constructors and Associates, general contractor.

To help you with your scaffolding and concrete shoring methods, PS offers a complete nation-wide engineering service available to you locally. See the Yellow Pages in your 'phone directory for the nearest Patent Scaffolding office or representative that sells and rents "Gold Medal" Scaffolds.

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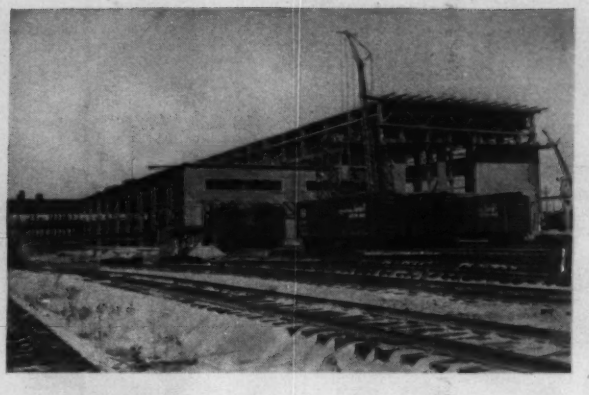
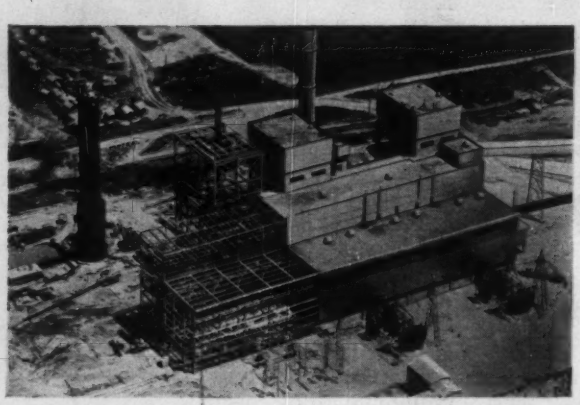


Here 2,400 tons of steel are used to frame the Santa Fe Railway's modern diesel locomotive shop. Kansas City Structural Steel Co. offers clients the advantage of working with a sound, well integrated organization (approximately 25% of 501 employees have been with the company for over 25 years)!



More than 4,700 tons of steel were fabricated and erected by Kansas City Structural Steel Company for the new Hawthorn Station steam-electric generating plant of Kansas City Power & Light Company. Careful planning and supervision kept the accident rate down.

Here's the steelwork fabricated by this firm for the zinc fuming plant of the American Smelting and Refining Company at Chihuahua, Mexico. This contractor's enviable safety record permits lower competitive bidding.

WERED THE BOOM ON COSTS!

A story on savings by Mr. Friendly

Moral: I-beams and plates weigh many a ton
If they fall, your days may be done
Safety first is safety best
Here we let our moral rest!

Kansas City Structural Steel Company of Kansas City, Kansas, fabricates and erects structural steel for many of the largest concerns in the United States. They have been insured for Workmen's Compensation Insurance with American Mutual for more than 20 years.

Top management of this company knows that safety must be a *basic* operating policy and works hand in hand with American Mutual Safety Engineers. That's how Kansas City Structural Steel Company *keeps* the remarkable accident-prevention record it has built up over the years. The resulting premium and dividend savings are substantial and are reflected in their costs.

If you are interested in a service that can help you reduce accidents and produce important savings in premiums and operating costs, write today for your free copy of "Foremanship and Accident Prevention in Construction." American Mutual Liability Insurance Company, Dept. E-133, 142 Berkeley Street, Boston 16, Mass.

AMERICAN MUTUAL

A M

Service from 77 fully staffed offices!

Savings from regular substantial dividends!

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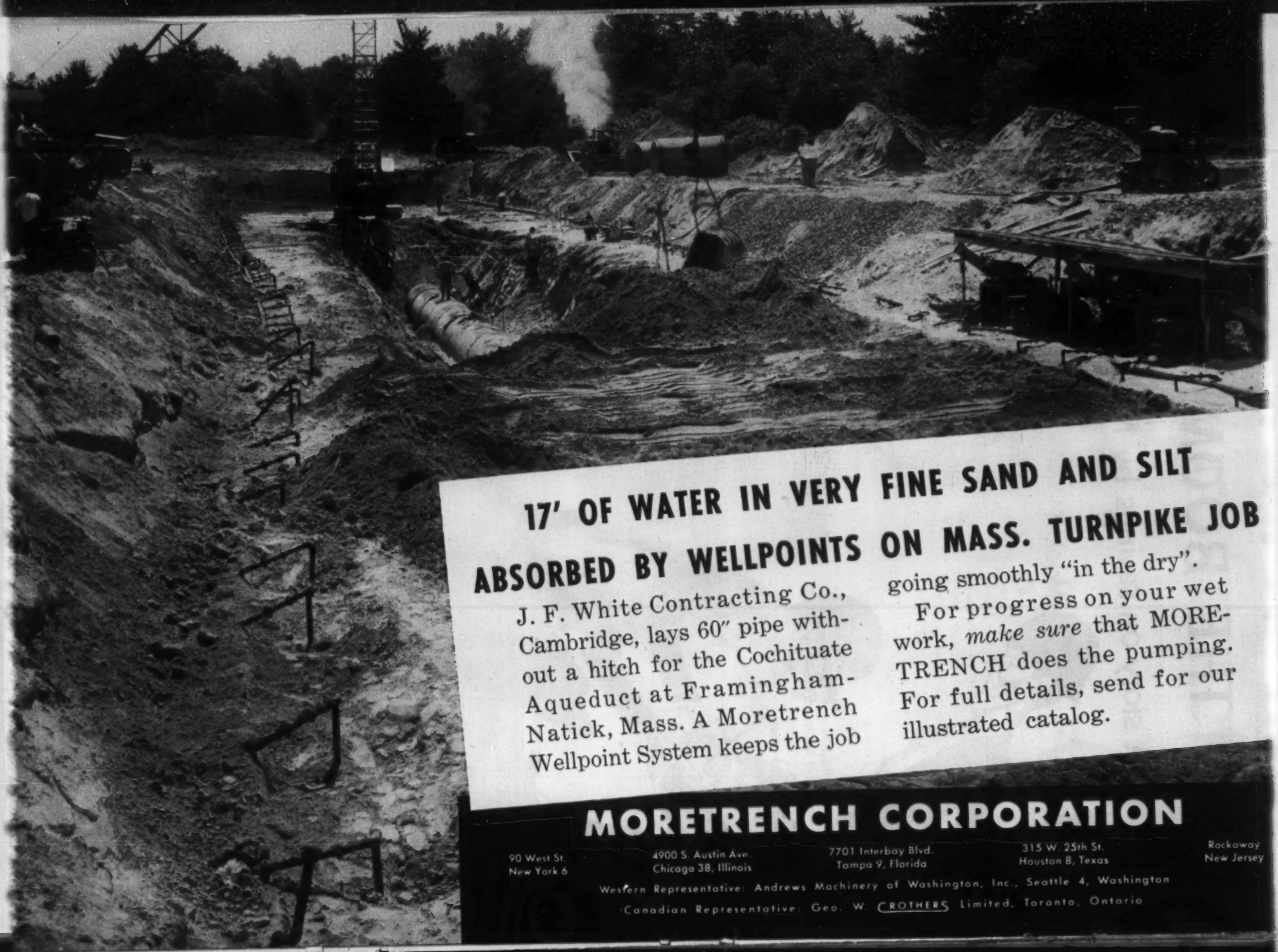
RESEARCH

NEW LUBER-FINER



17′ OF WATER IN VERY FINE SAND AND SILT ABSORBED BY WELLPOINTS ON MASS. TURNPIKE JOB

J. F. White Contracting Co., Cambridge, lays 60″ pipe without a hitch for the Cochituate Aqueduct at Framingham-Natick, Mass. A Moretrench Wellpoint System keeps the job going smoothly "in the dry".

For progress on your wet work, *make sure* that MORETRENCH does the pumping. For full details, send for our illustrated catalog.

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Canadian Representative: Geo. W. CROTHERS Limited, Toronto, Ontario

New Giant Can Bend Bridges

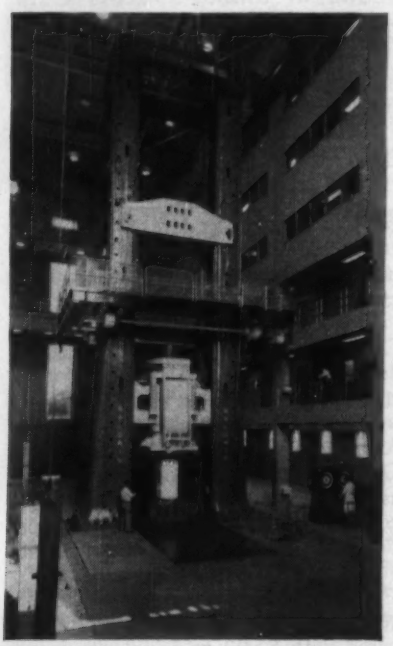
Columns, built-up girders and trusses of unprecedented size are handled by 5,000,000-lb testing machine at Lehigh lab

A 5,000,000-lb universal testing machine, said to be the world's largest, was the feature attraction at dedication ceremonies last week for Lehigh University's new annex to Fritz Engineering Laboratory—the college's civil engineering lab. The 76-ft-high monster is capable of bending a 100-ft plate girder railroad bridge.

The first Fritz Engineering Laboratory was built in 1909 by John Fritz, a trustee of Lehigh, for research in such fields as hydraulics and material testing. The new building is an addition to the original structure, and consists of a seven-story section 130 by 70 ft and a four-story section 114 by 24 ft. At one end of the annex is the main test bay, 130 by 50 ft, which houses the 5,000,000-lb testing machine as well as a separate dynamic testing bed featuring Amsler repeated-load equipment.

Here is the data on the new machine:

- It was designed and built by Baldwin-Lima-Hamilton Corporation, Philadelphia, Pa.
- It is capable of applying tensional or compressional loads up to 5,000,000 lbs, and can be used for bending tests as well.
- Height totals 76 ft, 60 ft above the test floor and 16 ft below.
- Weight of the machine and accessories is 925,000 lbs.
- Specimens up to 40-ft high can be tested in either tension or compression—beams or girders of 100 ft length in bending. Width of specimen is governed by the clear space between columns of 10 ft.
- Loads are applied hydraulically by a movable cylinder on a stationary piston 54 in. in diameter that is mounted on the bottom of the base.
- The cylinder carries two 16-in. vertical screws through which loads are applied on test specimens. The screws are 62 ft long, and weigh 45,000 lb each. They are rotated by a 75-hp electric motor that positions the crosshead prior to a test.
- The load-measuring system is hydraulic and independent of the loading system. Its guaranteed accuracy is within ½% of the dial reading. Six measuring scales are provided, the low scale reading to a maximum of 20,000 lbs and indicating variations as small as 20 lb.

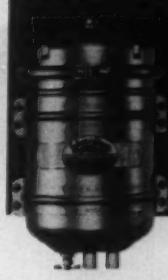


STRONG BUT SENSITIVE is the 5,000,000-lb. testing machine that is capable of crushing a concrete column, buckling a steel girder, or tearing asunder a 40-ft long steel member. Yet, the large push-pull crosshead can be positioned within fractions of an inch.

Handles bigger pieces—While there are two other 5,000,000-lb testing machines in this country—both government owned—neither can handle specimens of the size taken by this one. This means that engineers, for the first time, will be able to test the behavior of large columns, cables, built-up girders and trusses whose strength before could only be estimated. Results will help in improving design practices and evaluating new engineering materials.

The other section of the main test bay is devoted to the dynamic testing bed where the Amsler repeated-load equipment is located. Here, specimens of any shape, up to 14 ft wide by 70 ft long, can be subjected to repeated tension, compression, bending or torsional loads, or any combination of such loadings. In this area fatigue tests can be run on the members of a railroad bridge, the pistons of an

NEW LUBER-FINER INDUSTRIAL MODELS ANNOUNCED



Luber-finer

MODELS 272-C & 363-C FOR MOBILE STATIONARY & MARINE ENGINES

With up to 3 & 4 Gal. Crankcase Capacities

NOTE: All Luber-finer Models may be used on engines larger than recommended; however, the Pack life will be proportionately shorter.

CHECK ALL THESE EXCLUSIVE LUBER-FINER FEATURES

- **SINGLE BOLT CLOSURE**—Ingeniously designed Clamping Ring utilizes Single Bolt Closure for quick, easy Pack Replacement.
- **POSITIVE SEALING GASKET**—Long-lasting "O" ring type gasket assures leak-proof lid closure at all operating pressures.
- **POSITIVE PACK SEAL**—An outstanding feature that eliminates the possibility of oil ever by-passing the Luber-finer pack.
- **DUAL SAFETY VALVES**—Prevents oil drain-back, assuring exact crankcase oil level reading at all times, stops oil from circulating through unit if lines are reversed or if the Luber-finer Unit is otherwise improperly installed.

Luber-finer Units are Standard and Optional Equipment on America's Leading Diesel Trucks, Tractors and Stationary Engines

AND DON'T FORGET! For Luber-finer's Engineered Protection — Be Sure There is a Genuine LUBER-FINER PACK INSIDE!

Only a Luber-finer Unit plus a Genuine Luber-finer Pack can give you the Exclusive Patented Filtering Process that has made Luber-finer the Standard of the Industry since 1936!

For Complete Information Write Dept. 91

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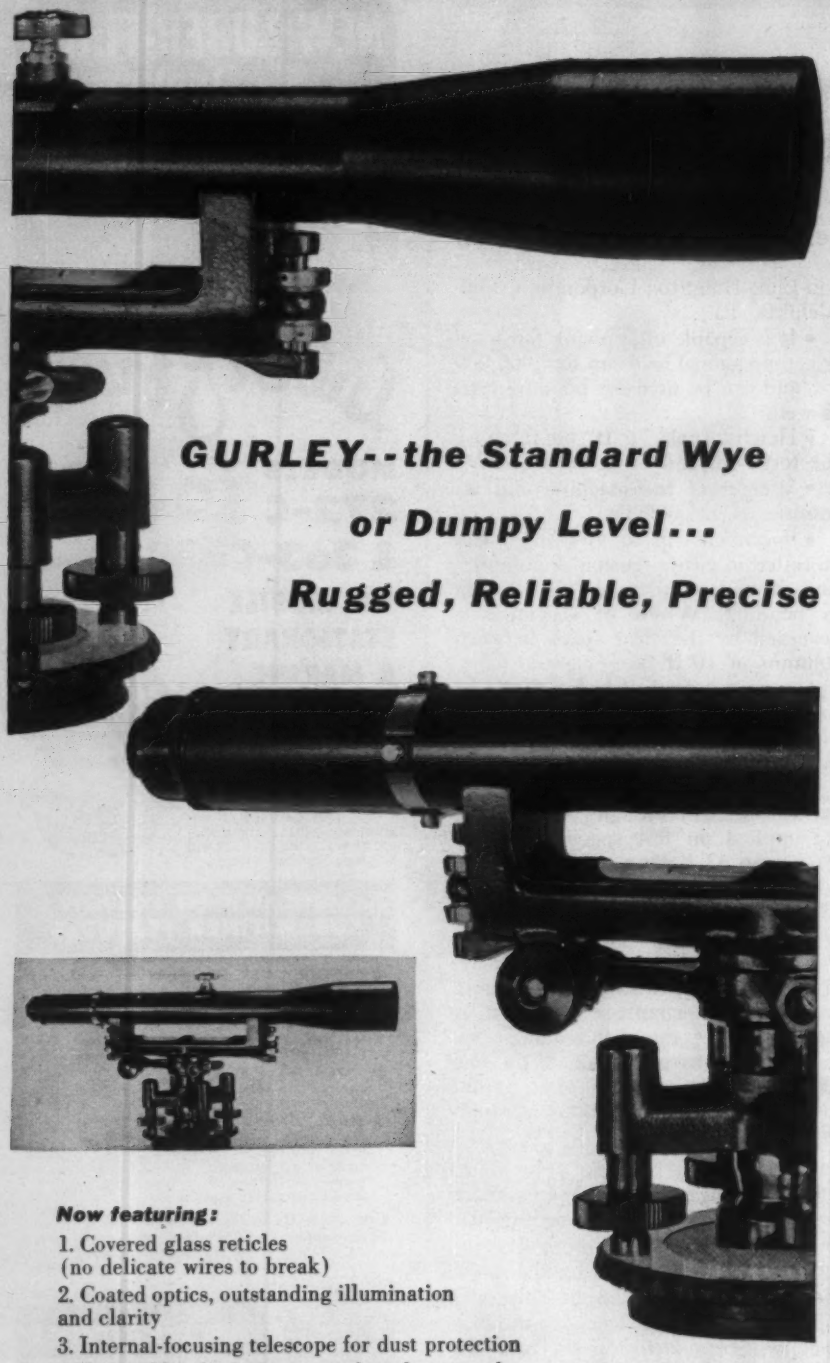
RADIO helps build roads,



GURLEY--the Standard Wye or Dumpy Level... Rugged, Reliable, Precise

Now featuring:

1. Covered glass reticles (no delicate wires to break)
2. Coated optics, outstanding illumination and clarity
3. Internal-focusing telescope for dust protection
4. Covered leveling screws, no threads exposed
5. Leaf-type tangent springs: smooth-acting, unaffected by dust and dirt
6. Tangent screws impinge on agate bearings

Made in 18" Wye or Dumpy models with rigid tripod and mahogany carrying case.

Plus Variable Power, now standard on all Gurley transits and levels, permits wide range of magnification with *one* eyepiece. Change your magnification to suit weather and light conditions. Built-in haze filter. Write for "Facts on VP."

GURLEY

W. & L. E. Gurley, Union Plaza, Troy, New York
Established 1845

automobile, the axle of a freight car, the drive shaft of a tractor, or the wings or other parts of aircraft.

Manufactured in Switzerland, the Amsler equipment consists of an integrated set of jacks, pumps, and load measuring devices designed to apply and measure repeated loads. Loads can be applied with the equipment up to 100 tons in magnitude and at a rate of from 250 to 500 cycles per minute.

The main test bay is serviced by a 20-ton crane that travels on rails mounted 65 ft overhead.

In addition to these facilities the new building contains special laboratories for instruction and research in concrete, hydraulics, materials testing, soil mechanics, sanitary engineering and structures. For the fabrication of test specimens there is a completely equipped machine shop plus a welding shop.

It will be served by a complement of 60 people for whose use there are a total of 39 offices, a research library, two seminar rooms and a photo dark room. The building is air conditioned and has a self-operated passenger elevator.

Dr. Allen V. Astin, director of the National Bureau of Standards, was the principal speaker at the dedication.

Sediment Lining Process Cuts Canal Water Loss Cheaply

An inexpensive process for lining canals against water loss has been developed by the department of civil engineering at Colorado A & M, Fort Collins.

Called sediment lining, the process is a grouting procedure by which a controlled charge of water and suspended sediment flow down the canal and seal it by penetration.

On one test near Fort Collins, Colo., water loss on a canal was reduced from 50% to 7%, and penetration ran as high as 3 ft.

High-swell bentonite, a material found mainly in Wyoming, South Dakota, and Montana, is being used as the suspended sediment. Its high colloidal yield and stable dispersion potential make it particularly suitable for a canal liner.

Sediment lining with bentonite costs about $0.20 per sq yd, compared with $2.00 to $5.00 per sq yd for unreinforced concrete or asphaltic concrete, $0.80 to $2.00 for buried asphalt or bentonite membrane, and $0.40 to $1.00 per sq yd for heavy compacted earth.

Tests for effectiveness are being run at Shell Canal near Greybull, Wyo.

RADIO helps build roads, level rough country, fight fires in the California mountains

Archibald's two-way radio-equipped supervisory vehicles, and special units such as the roving greasing truck (above), coordinate as many as 12 widely separated projects with the San Carlos head office. Radio keeps all units under constant supervision, saves time, money.

J. O. Archibald Co., San Carlos General Engineering Contractor Uses G-E 2-Way Radio . . . Keeps Equipment Working A Dozen Jobs At One Time.

ORDERS from the head office of the J. O. Archibald Company are dispatched to supervisors on the job by two-way radio. Company operations, sometimes widely separated, cover the San Francisco peninsula area and surrounding mountain districts. Yet all projects are under radio direction—through two-way radio equipped supervisory vehicles.

Archibald operates under private and government contracts for road building, pipeline installation, and earth moving projects of all kinds. When needed, company equipment helps fight fires threatening vital lumber lands.

"Radio Has Paid For Itself Many Times . . ."

"Our G-E radio has paid for itself many times over", say Archibald officials. "It saves us time, is convenient, speeds parts and men to projects, permits prompt response to emergency calls." The company reports excellent coverage with low band equipment—a 60 mile average from base to car, at times up to 60 miles car to car. A remote relay transmitter atop a mountain four miles from the base station helps overcome terrain interference.

Progress Line Offers New Advantages

The new G-E Progress Line of two way radio saves money on maintenance through faster servicing, protects from obsolescence because chassis are interchangeable. Changes in frequency, power, type of reception are made quickly at a minimum cost. See your local G-E Communications Counselor for full details. Or, write to: *General Electric Company, Communication Equipment, Section X22105-20, Electronics Park, Syracuse, New York.*

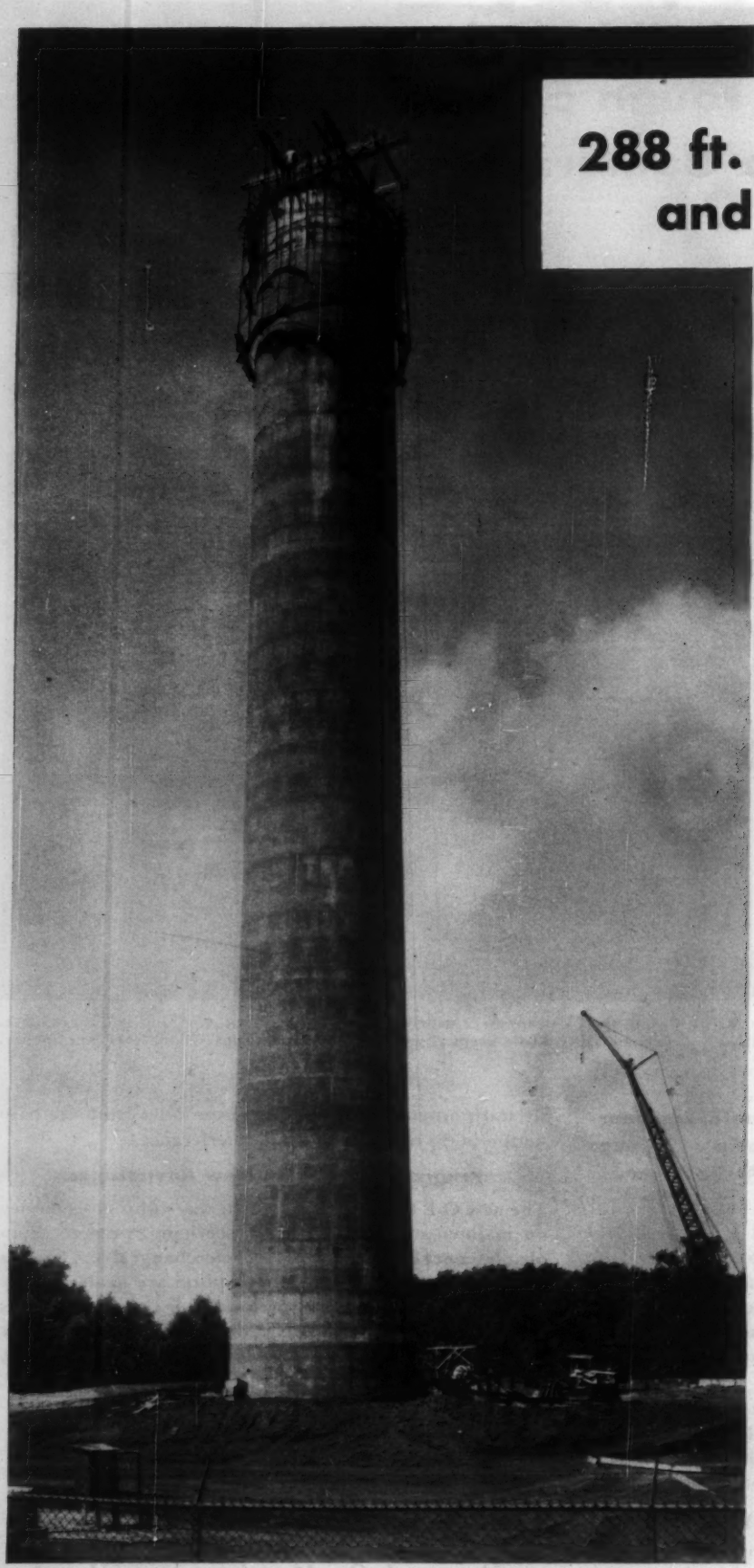
2-WAY MOBILE RADIO

Progress Is Our Most Important Product

GENERAL ELECTRIC

95

288 ft. tall, air-cooled and cost-saving



Concrete shell stacks up to 732' high have been constructed by the method here being used for Picway Generating Plant of the Columbus & Southern Ohio Electric Co. One-yard concrete bucket, operating inside the stack and controlled from the rising platform, places material for each 7'6" stage. Rust Engineering, Pittsburgh, Pa., designers.

You can build a power generator stack like this with only 6" of firebrick inside an inexpensive shell of concrete — provided you allow a 6" space between the two, vented top and bottom for draft cooling.

Part of the economy of this design is its low cost construction. One set of 7½' forms, easily tapered by removing staves, was used to step-pour the entire 288' above ground, in daily stages. The forms were moved each morning and new concrete poured at mid-day.

The first section, of 27' diameter, and 20" wall thickness, heavily reinforced, required a 4½ hours' pour of 26 cu. yds. of concrete. The final top section, of 16' diameter and 6" wall thickness, needed only 5¾ cu. yds. of material and was poured in 20 minutes.

The obvious inefficiency of maintaining a mixing crew for such widely varying requirements was avoided by using ready-mixed concrete. Starting with six daily deliveries and gradually diminishing to one, 400 cu. yds. of concrete were poured over a 44 day period. Each batch was on schedule and produced to rigid specifications in truck mixers of certified design, capacity, mixing speed and accuracy of water control.

You have a right to insist on this Rating Plate. It certifies compliance with the high industry standards maintained for your protection by the Truck Mixer Manufacturers Bureau.

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WILLARD CONCRETE MACHINERY CO., LTD.
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WORTHINGTON CORPORATION
Plainfield, N. J.

C. W. Black

Black Named President Of Arundel Corporation

In a series of new appointments in The Arundel Corporation, several civil engineers have been promoted to top command posts in the Baltimore, Md., engineering construction firm.

Heading the list is C. Warren Black, who was named as president to succeed the late Richard A. Froehlinger. He was moved up from executive vice president, which he held since 1952.

Associated with Arundel since the founding of the company in 1919, Black has represented the firm in a number of joint ventures for construction projects throughout the United States and the Caribbean. In this capacity, he served as director of Pacific Constructors, Inc., which built the Shasta Dam in California, and as vice president of National Constructors, Inc., contractor on the $20-million Allatoona Dam in Georgia.

Other newly-appointed officers are:

- William G. Armstrong, senior vice president. Formerly vice president in charge of dredging, he's been a member of the executive committee and a director for the past nine years.
- Richard Stephens, vice president for construction, who joined Arundel in 1944 as executive assistant in its dredging division.
- Roland D. Foley, vice president. Since 1926, he has served in various engineering and administrative capacities in the construction department, including service as a member of the operating committee handling Navy contract work.

Royal Canadian Engineers To Get Seaway Experience

The Royal Canadian Engineers and Canada's St. Lawrence Seaway Authority have announced a new program designed to broaden and increase the experience of young officers of the corps in civilian engineering practices.

Throughout the period of construction on the seaway, junior officers of the corps will be attached to the authority for engineering service in a supervisory capacity.

Four officers have been selected for one-year assignments, beginning in January. They will work as inspectors under the supervision of A. G. Murphy, chief engineer for the Canadian Seaway Authority.

It is expected that engineer officers on these assignments will gain on-the-job experience in such phases of heavy construction operations as earth moving, quarrying and rock handling, compaction, pumping and dewatering of sites, mass and reinforced concrete construction, road building and paving, and erection of steel structures, including lock gates, lock valves and bridges.

Port Agency Names Herring As New Planning Director

Frank W. Herring, civil engineer engaged in public works planning for 35 years, has been appointed deputy director for comprehensive planning by The Port of New York Authority.

Chief of the bi-state agency's planning division for the last eight years, Herring was with the National Housing Agency as director of its Land and Public Services Branch, and with the Office of Urban Development.

In the newly-established post with the authority, he will be responsible for furthering the agency's long range planning for the development, modernization and efficient coordination and development of terminal and transportation facilities.

An engineering graduate of Johns Hopkins University and a former assistant editor of ENGINEERING NEWS-RECORD, Herring was deputy chairman of the Facilities Committee of the War Production Board, and served with the Civil Engineer Corps of the Navy, during World War II. Earlier, he was executive director of the American Public Works Association.

His successor as chief of the Authority's Planning Division will be Hayden B. Johnson, now city manager of Poughkeepsie, N. Y.

A. L. Wiesenberger

Wiesenberger Appointed Chief Highway Engineer

Arthur L. Wiesenberger of Allentown, Pa., has been promoted to chief highway engineer for the Pennsylvania State Department of Highways. He succeeds G. J. Richards, now a deputy secretary in the department.

As chief engineer, Wiesenberger is directly responsible for all technical programs of the department.

Since last March, the new chief engineer had been a highway district engineer—his first state job—with headquarters in Allentown. He is a civil engineering graduate of Cornell University and previously had his own consulting engineering practice, specializing in industrial and public engineering projects.

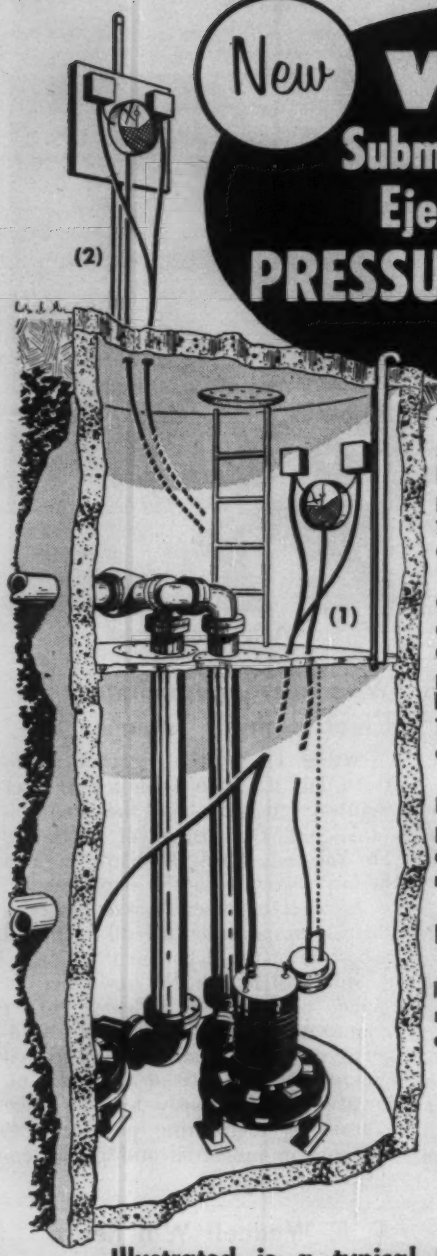
T. B. Waddell Will Retire From Public Works Post

Thomas B. Waddell, assistant state engineer, will retire from the California State Department of Public Works on Nov. 2. His retirement will follow by one day those of state engineer A. D. Edmonston and assistant state engineer G. H. Jones (ENR, Sept. 29, p. 291).

Appointed assistant state engineer in 1951, Waddell has been in state service for the last 38 years. During more than half this period, he served with the Division of Water Resources, first as a hydraulic engineer, and later as supervising and principal hydraulic engineer.

(*Men and Jobs continued on page 98*)

New **weil** Submersible Sewage Ejectors with PRESSURE CONTROL



The **weil** NON-CLOG Screenless Submersible Sewage Pump with the BLADELESS Impeller — the pump that pumps ALL SEWAGE and drainage water, even rags — now furnished with automatic pressure type control.

Operating on the liquid level, works equally well in deep or shallow pits. Control switches may be installed in pit, on a pole outside of pit, or in a building a considerable distance away. This feature materially reduces overall cost of installation.

It will provide for control for various pumping levels, and may be quickly adjusted in the field when pumping requirements of installation change.

Not Affected by Oil or Grease

IDEAL FOR DUPLEX PUMPS—Will alternate pumps and provide for standby emergency service.

Illustration shows controls mounted (1) in pit, and (2) on pole outside of pit demonstrating the versatility of this type of control.

Illustrated is a typical LIFT STATION or HIGHWAY UNDERPASS DRAINAGE STATION. No pump house is required.

Submersible Sewage Ejectors are available with:

Capacities from 35 to 2000 GPM
Heads to 70 feet
Discharges 3", 4", 5" and 6"
Powered with ½ to 20 H.P. Motors

Send for

NEW Bulletin SE 860 C with plans and specifications for lift stations, highway underpass pumping installations and many other applications requiring economical and dependable waste pumping.

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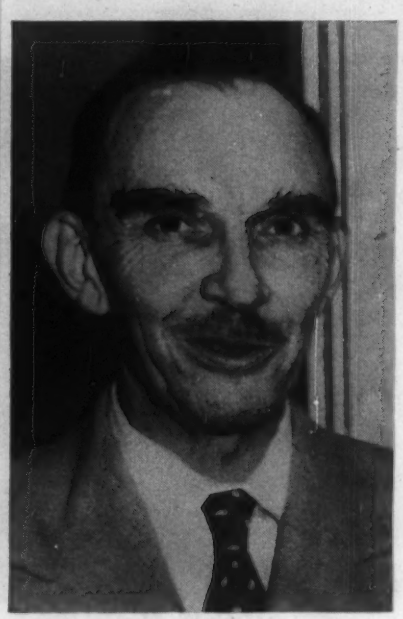


C. Page

Army Civil Engineer Cited For Outstanding Service

In recognition of his outstanding service, Carter Page, chief of the Corps of Engineers' Planning Division, Civil Works, has received an Army Sustained Performance of Duty Award for the year ended June 1955. The award was presented by Lt. Gen. S. D. Sturgis, Jr., Chief of Engineers.

Brig. Gen. E. C. Itschener, Assistant Chief of Engineers for Civil Works, in recommending Page for the award, emphasized his contributions to "the successful advancement of the Corps of Engineers" in the field of water resource development.

Page, who was assigned to his present post a year ago, has been a civil engineer with the corps since 1929. During the war, he aided in the organization of the Air Forces Section, Military Construction Division, and later served as a commissioned officer in Africa and Europe.

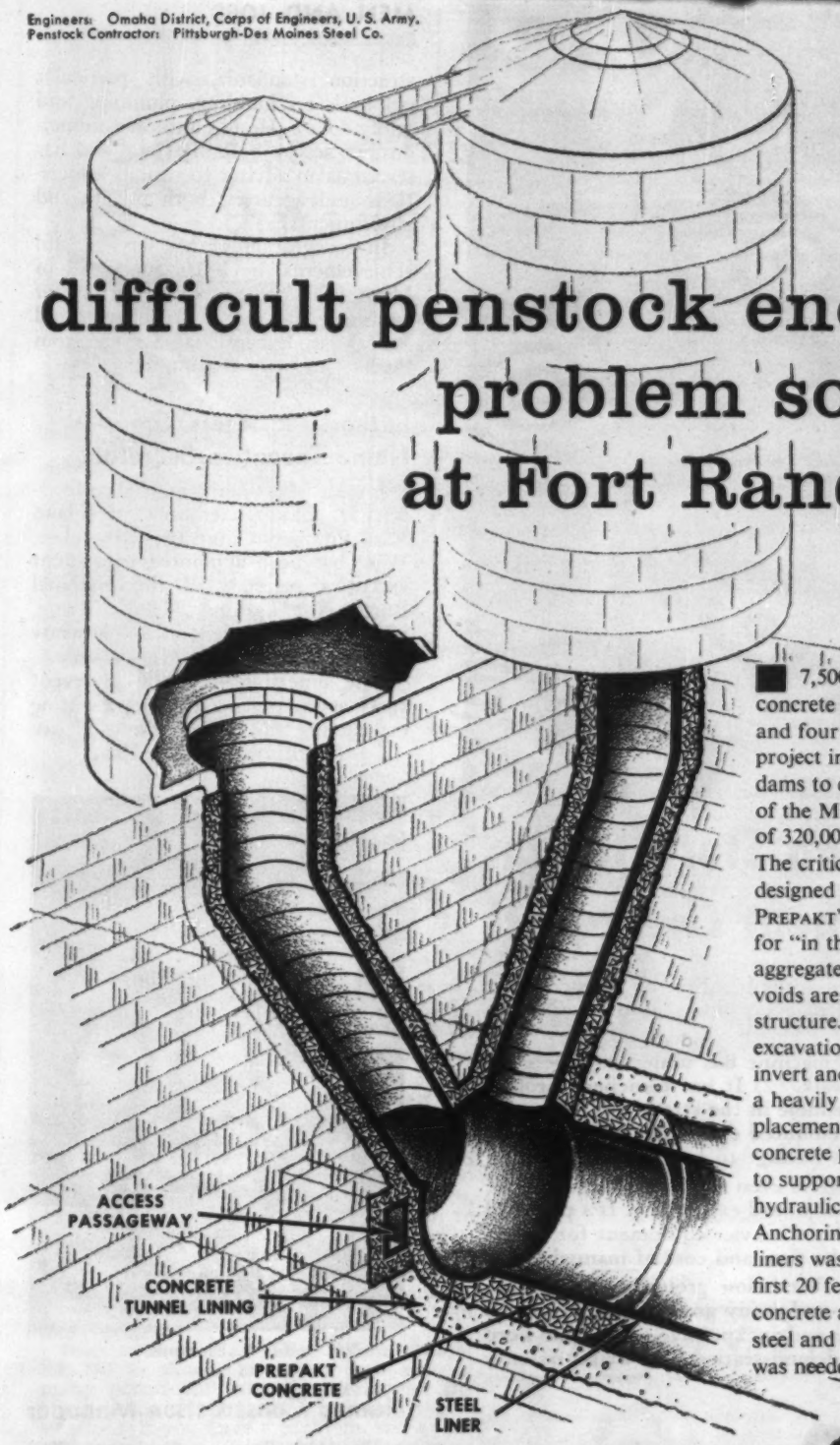
G. N. Thompson Retires From Bureau of Standards

George N. Thompson, specialist in the field of building codes and safety, has retired from the National Bureau of Standards, with which he was associated for 31 years. At the time of his retirement, he was assistant chief of the Building Technology Division and chief of the Codes and Specifications Section.

During his service with the bureau, his interests were concentrated on development of improved building con-

Engineers: Omaha District, Corps of Engineers, U. S. Army.
Penstock Contractor: Pittsburgh-Des Moines Steel Co.

difficult penstock encasement problem solved at Fort Randall Dam...



■ 7,500 cubic yards of high-strength PREPAKT concrete have been used to embed eight penstocks and four "Y"-risers at the Fort Randall Dam project in South Dakota. One of a series of new dams to control floods and harness the power of the Missouri River, it will have an output of 320,000 kw.

The critical area where risers meet the penstock was designed specifically to use the advantages of PREPAKT's ease of placement. The PREPAKT method for "in the form" consolidation of preplaced aggregate with INTRUSION mortar assures that all voids are filled forming a solid monolithic structure. Its use made possible (1) minimum excavation, (2) complete embedment even under invert and at crown and (3) simplified placement in a heavily reinforced area where conventional placement would have been difficult. PREPAKT concrete provides the thorough encasement needed to support the risers and withstand varying hydraulic stresses.

Anchoring the upstream ends of the 900-foot steel liners was accomplished by encasing only the first 20 feet. The low-shrinkage feature of PREPAKT concrete assured a strong, permanent bond to both steel and existing concrete. No after-grouting was needed.

CONTRACTORS PREPAKT® ENGINEERS

Prepakt maintains a complete field construction organization, plus an engineering service and functions as prime or sub-contractor. For further information, write: The Prepakt Concrete Co., Room 779-D Union Commerce Bldg., Cleveland.

Intrusion and *Prepakt* are trade marks of Intrusion-Prepakt, Inc., whose methods and materials are covered by U. S. Patents Nos. 2313110, 2655004, 2434302 and others, also patents pending.

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DIVISION OF INTRUSION-PREPAKT, INC.

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struction standards, with particular emphasis on building, plumbing and safety codes. He has authored numerous articles on building codes and has served as an advisor to various associations and agencies, both private and governmental.

In recognition of his services and achievements, he holds an Award of Merit from the American Society for Testing Materials, and the Gold Medal for Exceptional Service from the Department of Commerce.

Lathers-Plasterers Group Name Executive Secretary

Joseph M. Baker, former Washington, D. C., representative of Inland Steel Products Company, Milwaukee, Wis., has been appointed permanent executive secretary of the National Bureau for Lathing and Plastering, which he has served on a temporary basis for the past two years.

The bureau has evolved in recent years as an organization representing contractors and union groups active

(Continued on page 102)

G. A. Lindquist

Named Construction Manager

The H. K. Ferguson Company, Cleveland, Ohio, engineers and builders, has appointed George A. Lindquist construction manager of the company's 10-state western district, with headquarters in San Francisco. A 30-year Ferguson veteran, Lindquist has served as project manager on some of the firm's largest construction jobs, and recently completed a $20-million "Terylene" synthetic fiber plant for Imperial Chemical Industries, Ltd., at Kingston, Ontario.

Use This Actual Job Story for an Excavating Equipment Check List!

This one water line job demonstrates a combination of features that *only* the Sherman Power Digger offers every operator of excavating and trenching equipment.

Check this performance: (1) The machine has under-dug the curb without damage to the curb or sidewalk. (2) It has trenched through rocks and roots. (3) It is digging a bellhole in the street. (4) The excavation is 9 feet deep. (5) The tractor-mounted digger has operated over the curb, sidewalk and street without damage to paving.

And the Sherman Power Digger offers even more advantages to the operator who wants the savings of mechanized excavating. It's practical even on the smallest jobs, since it releases heavier equipment for bigger jobs . . . yet it digs at a fraction of the time and cost of manual labor.

The machine digs as deep as 10 feet below ground . . . in mud, hardpan, shale, oiled roads, blacktop and stony ground. Initial cost is surprisingly low, maintenance simple and inexpensive. Ask your Ford Tractor Dealer for an on-the-job demonstration, or write us now for Bulletin No. 1421.

*Designed, Engineered and Manufactured Jointly by Sherman Products, Inc., Royal Oak, Michigan, Wain-Roy Corporation, Hubbardston, Mass.

•

Patent No. 2-303-852
Other Patents Pending

•

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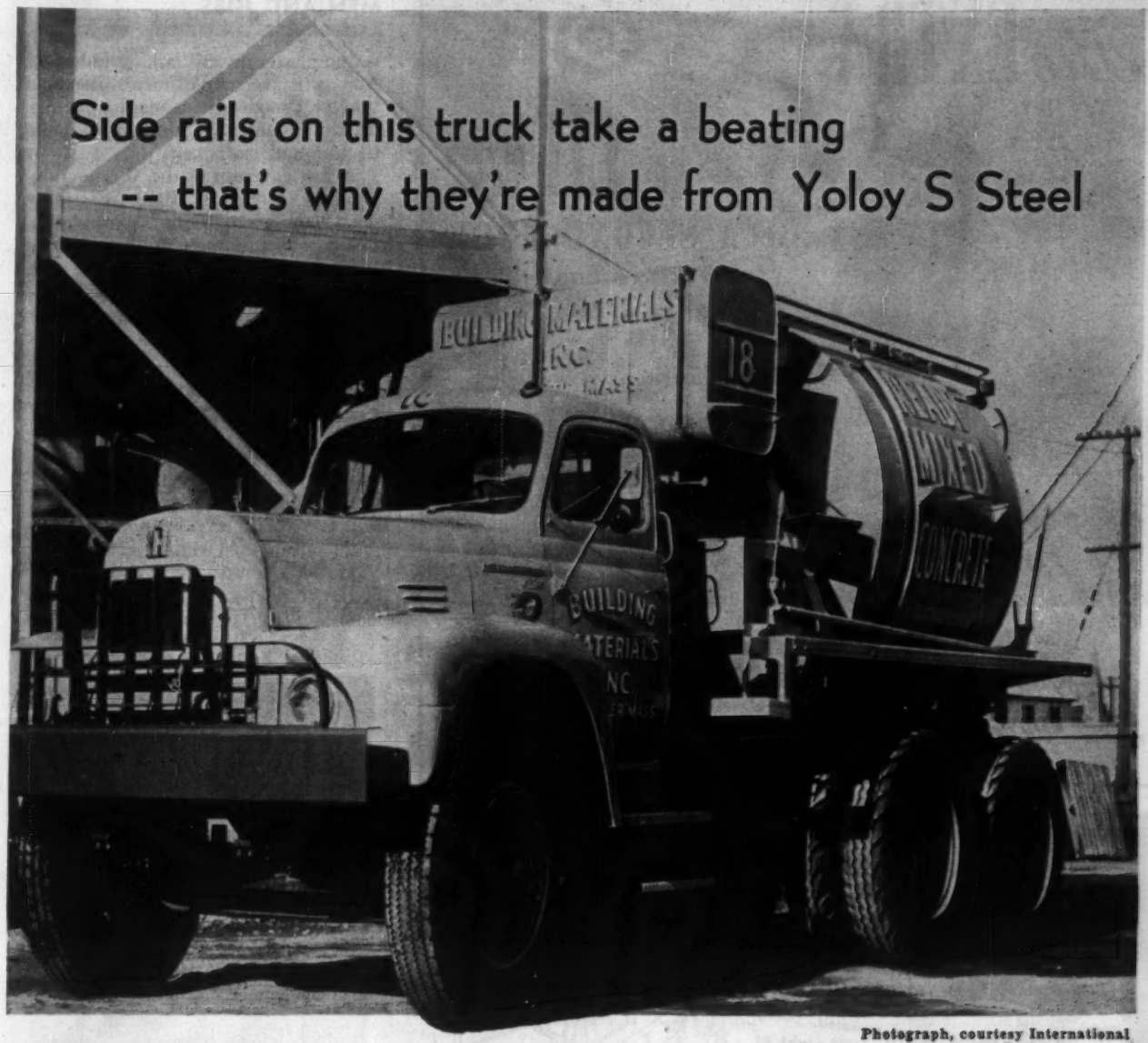
PRODUCTS, INC.
ROYAL OAK, MICHIGAN
POWER DIGGERS* • FRONT END LOADERS • FORK LIFTS
Sherman SP Products®

Side rails on this truck take a beating -- that's why they're made from Yoloy S Steel



Photograph, courtesy International Harvester Company

Built for rugged hauling, on and off highways, this mixer truck has to have side rails that can take it—that's why they are made from Yoloy S Steel.* Yoloy S because its' a higher strength steel, 65,000 lbs. per sq. in. minimum yield strength, especially made where higher strength to weight ratios from normal construction is required for additional stamina. It has higher resistance to corrosion, abrasion, shock and vibration. The higher strength of Yoloy S permits valuable reduction in dead weight.

International Harvester, whose Model RF-230 is shown above, is just one of many prominent manufacturers who include Yoloy steels in their building specifications. If you have a problem, we would like to help you. Our District Sales Office near you is ready to supply information and service on the specific steels in the Yoloy Family that best meet your needs.

*Yoloy S frames fabricated by The Youngstown Steel Car Co., Niles, Ohio.

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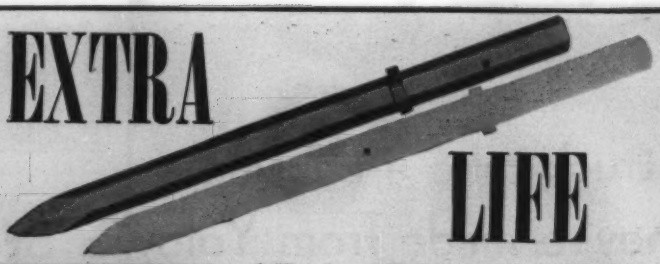

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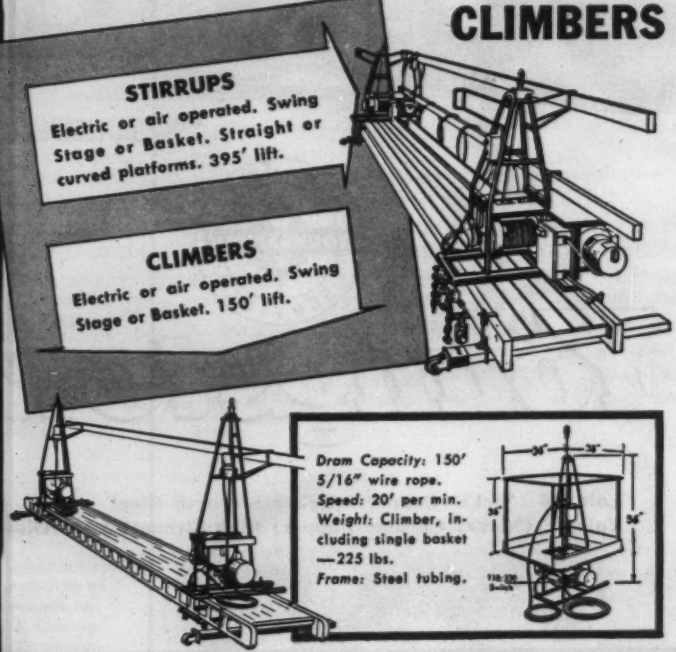

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in the plastering and lathing industry. Among its accomplishments is adoption of a code of standard practices for lathing and plastering among contractors and craftsmen.

A past governor of the Washington Building Congress, Baker has also served actively with the Washington Board of Trade, the Contracting Plasterers' International Association, the National Association of Home Builders and the Building Materials Association.

H. K. Gidley To Leave State Engineering Post

Harry K. Gidley, director of the Division of Sanitary Engineering, West Virginia State Department of Health, will leave state service on Oct. 15 to enter private engineering practice.

He will be associated with W. D. Kelley, consulting engineer, and William S. Staub, vice president of West

(*Continued on page 103*)

K. M. Saville

Calcium Chloride Institute Names A New Field Engineer

The Calcium Chloride Institution has named Keith M. Saville field engineer for the eastern coastal states, with headquarters in Washington, D. C.

A civil engineering graduate of the University of Missouri, Saville has been materials engineer for the District of Columbia Department of Highways. His previous assignment was with the Corps of Engineers as an instructor at Fort Belvoir, Va.

Saville's new duties will include engineering service for calcium chloride users from northern Virginia to the New England states.

Virginia Water Service Company in a new firm known as Kelley, Gidley and Staub, with offices in South Charleston, W. Va.

Except for a year and a half as sanitary engineer with the W. K. Kellog Foundation at Hastings, Mich., Gidley has been with the Division of Sanitary Engineering for the last 25 years and became its director in 1949. He was educated at West Virginia University and later obtained a masters degree in sanitary engineering from the University of North Carolina.

Gidley is presently serving as executive secretary of the West Virginia State Water Commission and is a commissioner of the Ohio River Valley Water Sanitation Commission.

H. G. Baity Retires From Academic Post

Herman Glenn Baity, professor and head of the Department of Sanitary Engineering at the University of North Carolina's School of Public Health, has retired after 30 years of service on the North Carolina faculty.

On leave of absence from the university since 1952, he is presently serving as director of the Division of Environmental Sanitation of the World Health Organization in Geneva, Switzerland.

In the course of his academic career, Baity has been professor of sanitary and municipal engineering, head of the Department of Civil Engineering, and dean of the School of Engineering. During World War II, he was chief sanitary engineer for Brazil with the Office of the Coordinator of Inter-American Affairs.

His successor at the university is Daniel A. Okun, who came to the university in 1952.

Public Works Director Joins Industrial Firm

Roy T. Sessums, director of public works for the state of Louisiana, resigned on Aug. 31 to become a vice presidential assistant and engineering coordinator for Freeport Sulphur Company, New Orleans. He had held the state post since 1952.

Now president of the Louisiana section of ASCE, Sessums began his career in the drafting division of the Minnesota Highway Department in 1937. He later taught civil engineering at Louisiana Polytechnic Institute, where he served as dean of the School of Engineering from 1940 to 1952.

Educated at LPI, he received his masters degree from Louisiana State University and did advanced graduate work in civil engineering at the University of Minnesota.

Setting steel tunnel supports with hydraulic jacks saves time and money...

● **What's Going On Here?**—Look how these heavy steel crown rib tunnel segments are raised and held in exact position with 20-ton hydraulic jacks until the complete rib is in place and bolted together. One man governs the action of these jacks by operating remote control valves. If unstable ground conditions should be encountered another set of jacks can be quickly set up to provide immediate support to the roof, sides and face until the next rib can be advanced and set. Spacer angles bolted between the ribs locate and tie the ribs together into a composite labyrinth. Shallow-depth formed steel lagging plates bolted to the outside of the ribs furnish protection from spalls and provide a surface to support back packing.

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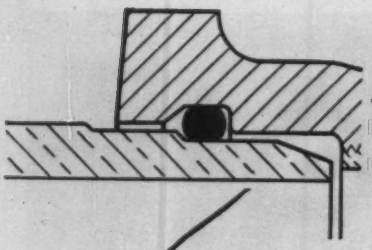

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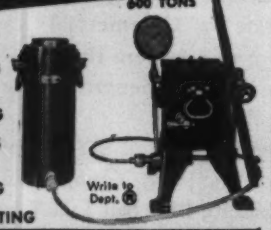

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Canada Honors Engineer Who Built Rideau Canal

The Engineering Institute of Canada paid tribute this month "to one of the greatest military engineers ever to set foot on Canadian soil" when it dedicated a memorial fountain honoring Lt. Col. John By of the Royal Engineers, builder of Canada's Rideau Canal and founder of Ottawa.

At the unveiling of the memorial, R. E. Heartz, M.E.I.C., president of the institute, said, "Too frequently we forget the achievements of those who have gone before us. This is particularly true of engineers. Therefore, we now rejoice that in this one instance at least, we have remembered."

Undertaken in 1826, the Rideau Canal, sometimes known as the first Canadian Seaway, stretches 123 miles from Ottawa to Kingston. It was built as a supply route to thwart American designs on Canadian shipping down the St. Lawrence. Col. By, who was sent over from England, chose as his headquarters for the canal's construction a spot near the junction of the Ottawa and Rideau Rivers. Then known as Bytown, its name was changed to Ottawa a hundred years ago.

Now on the bank of the Rideau Canal in the center of Ottawa, the memorial fountain was designed by Sir Charles Barry, R. A., architect of the British Houses of Parliament. It stood for over a hundred years in London's Trafalgar Square, until it was presented in 1948 to the National Gallery of Canada.

Men and Jobs Briefs . . .

• **Corps of Engineers**—Lt. Col. **Dean W. Barnes**, recently stationed in Germany with the Engineer Section, Headquarters, Seventh Army, is assigned to the Eastern Ocean District, New York, as military assistant for Iceland, Bermuda and the Azores . . . **Clarence J. Frenck** is granted a year's leave of absence from the design branch of the Portland, Ore., District to accept a United Nations appointment as expert for dam and hydroelectric work in New Delhi, India.

• **Careers**—The U. S. Public Health Service assigns **C. H. Atkins**, recently returned as advisor in public health engineering to the government of India, as regional engineer in the Washington Regional Office, succeeding **Edmund C. Garthe**, who becomes regional engineer in Denver; **Charles T. Wright**, former Denver regional engineer, is assigned to the Division of

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MEN AND JOBS

Sanitary Engineering Services in the Washington headquarters as chief of the Technical Services Section, General Engineering Program.

Edward A. Mueller becomes assistant engineer of traffic, concerned with traffic planning of urban expressway programs, for the Florida State Road Department . . . **Ernest M. Fullmer,** former chief architect, is named assistant director of operations for the Utah office of the FHA.

• **Business—William J. Bobisch,** resigns as director of design for the Eleventh Naval District Public Works Office, San Diego, and joins Moffat & Nichol, Inc., Long Beach, Calif., consulting engineers, as one of the principals . . . **Marquand S. Gorton** is appointed vice president and manager of Puget Sound Dredging Co. . . . **George F. Klein, Jr.,** is named chief engineer of Catalytic Construction Co., Philadelphia.

Arvon L. Davies, formerly associated with Merritt-Chapman & Scott and Raymond Concrete Pile Co., becomes coordinator for overseas development for Chemstrand Corp., Decatur, Ala. . . . **Ben M. Brown,** recently retired from Southern Pacific Co., joins Allen Engineering Co., San Francisco, as vice president.

In a reorganization of Johns-Manville Corp.'s Industrial Products Division, civil engineers **T. R. Turnbull** and **George R. R. Wahl** become production and merchandise manager, respectively, of the company's new Pipe Division . . . **A. I. Savin,** president of Savin Construction Corp., East Hartford, Conn., recently acquired M-C&S construction subsidiary, is elected a director of Merritt-Chapman & Scott . . . **C. I. Little** is named manager of the erection department of Kaiser Steel Corp., Los Angeles.

• **Education—Robert A. Hechtman,** specialist in the field of structural design and former professor of structural research at the University of Washington, is appointed professor of civil engineering and executive officer of the civil engineering department at George Washington University's School of Engineering.

At the Illinois Institute of Technology, **Vincent J. Cushing** is named manager of the propulsion and structural research department of Armour Research Foundation and **Richard Baringer** is appointed lecturer at the Institute of Design.

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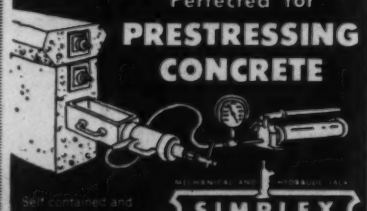

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OBITUARIES

Ernest P. Goodrich, 81, New York consulting engineer and city planning expert, died Oct. 7 in Brooklyn. As a pioneer in reinforced concrete construction as well as a specialist in waterfront and water works development, he had coped with engineering problems in many parts of the world—from the Philippine Islands and Valparaiso to Canton and Nanking. In addition, he was an advisor on city planning and industrial terminal work for many U. S. cities, including Detroit, Newark, Jersey City, Los Angeles and Omaha. He was also consulting engineer to the Department of Public Works in Manhattan and the Borough of Manhattan; director of the Bureau of Statistical Research of New York City; head of the engineering division of the New York City Sanitation Department. He received his engineering degree from the University of Michigan in 1898. Before setting up private practice he served with the Navy Civil Engineer Corps at the Brooklyn Navy Yard and as chief engineer of Brush Terminal Co. He was president of the American Institute of Consulting Engineers and, in 1905, received the Collingwood Prize of the American Society of Civil Engineers.

David M. Rea, 61, civil engineer who was manager of the municipal airport at Charlotte, N. C., died Oct. 1. He received his civil engineering degree from North Carolina State College in 1917. Following World War I he went to Waynesville, N. C., to work on the engineering project that later became TVA. He then served in Durham and Greensboro for 13 years as division engineer with the North Carolina Highway Department. In 1935 he became district director of the Works Progress Administration in Charlotte, where he worked with Army Engineers on construction of Morris Field. During World War II he was post engineer at Morris Field.

Melvin D. Williams, 79, the first public roads administrator in Alaska, died Sept. 28 at Richmond Beach, Wash. He had retired in 1945 after serving as a civil engineer for 47 years, 31 of them in government service. Early in his public career he was assigned to conduct a topographical survey of the Colorado River and Grand Canyon. He transferred to the Bureau of Public Roads in 1919 and spent six years in charge of forest highways in Utah before taking the Alaskan position.

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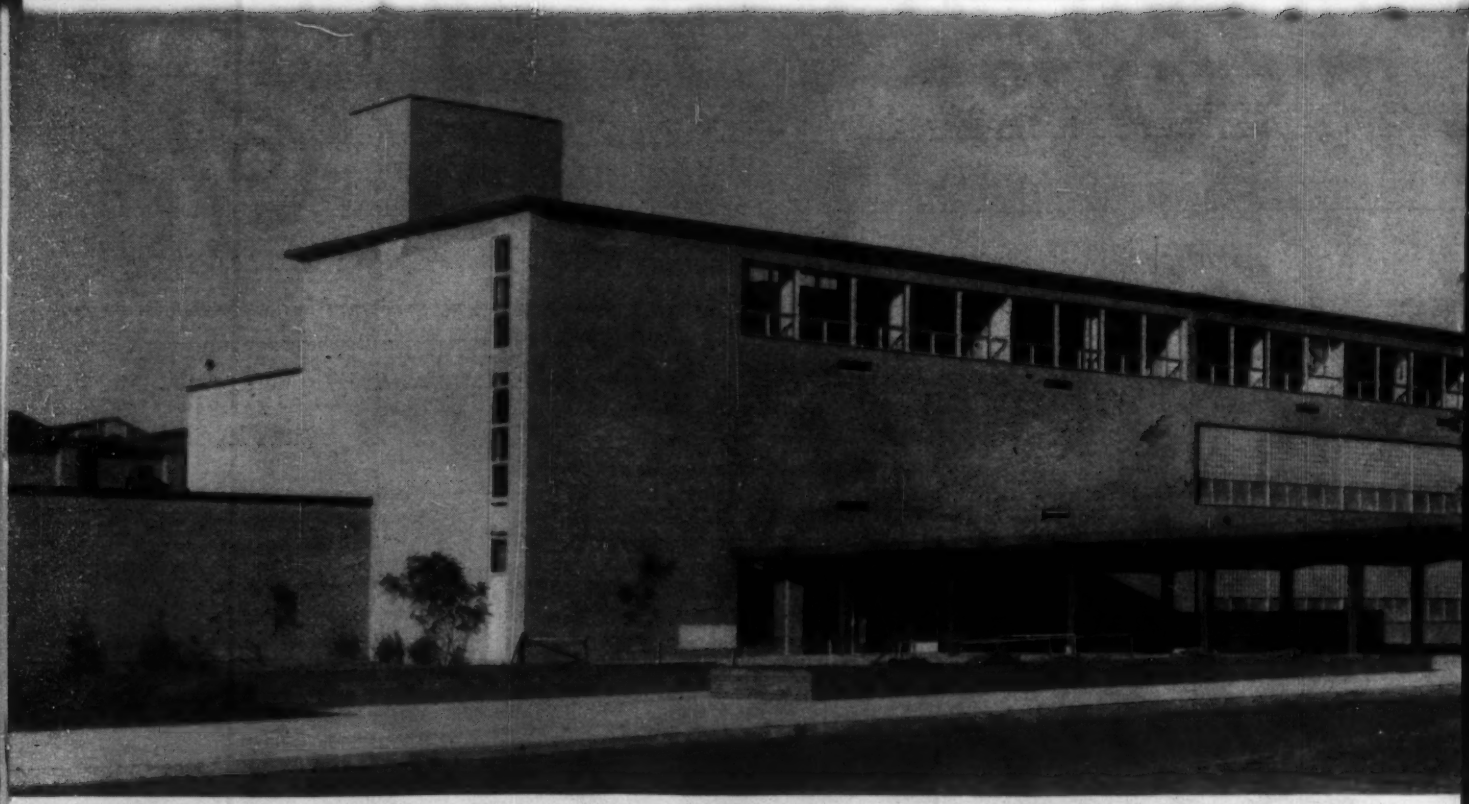

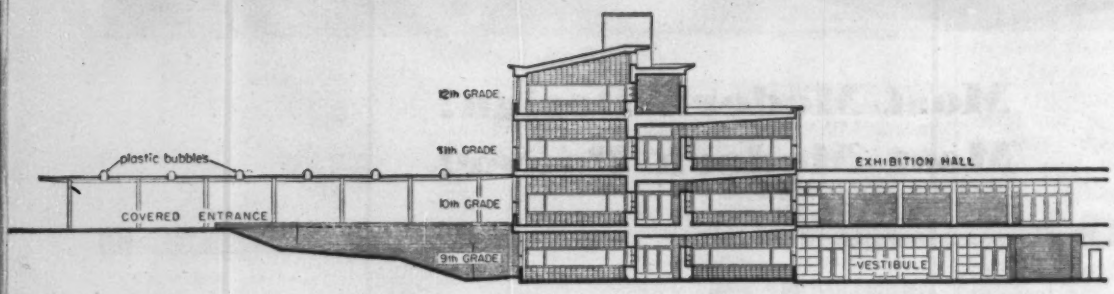

How a school was designed at savings of 31% in floor system costs

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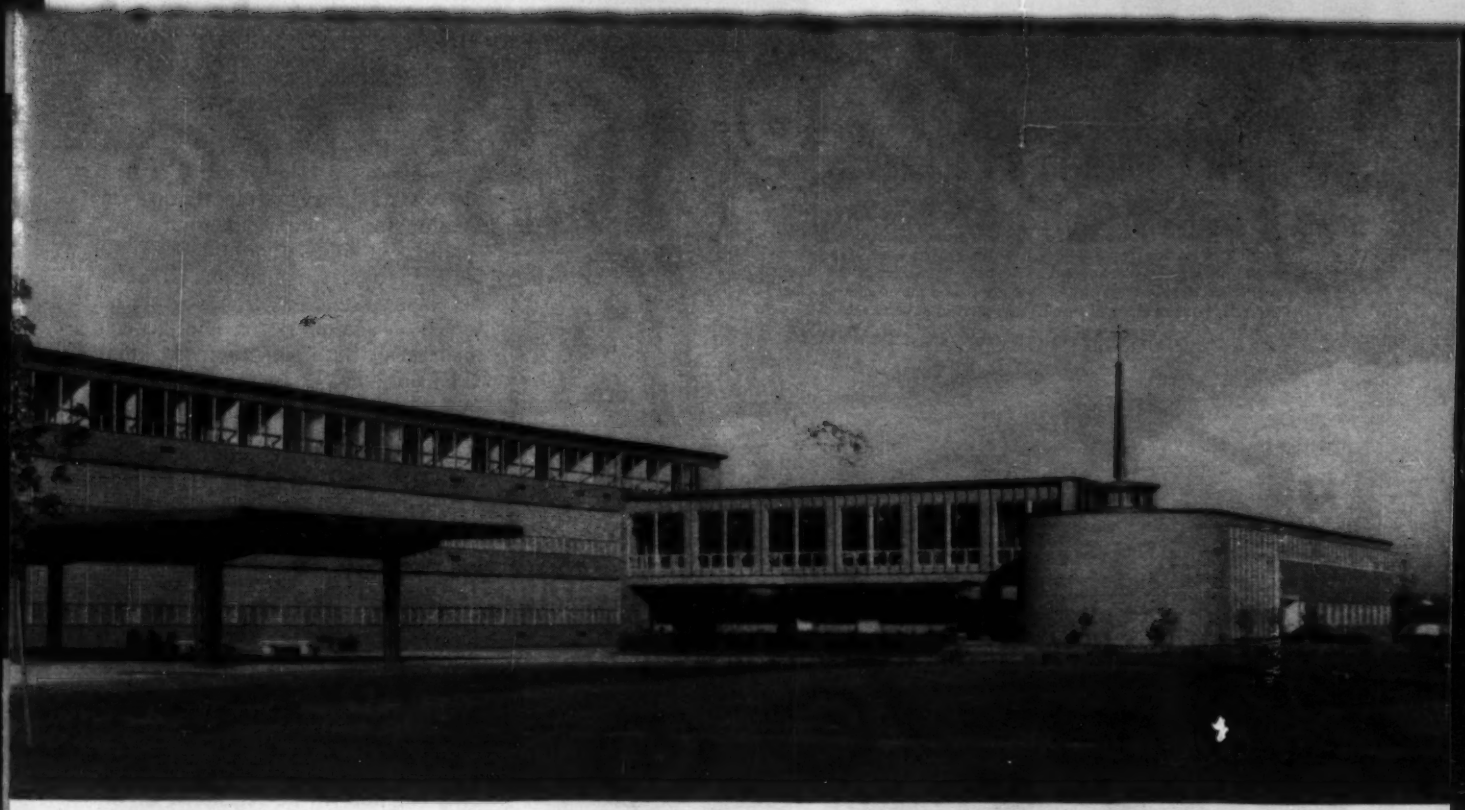
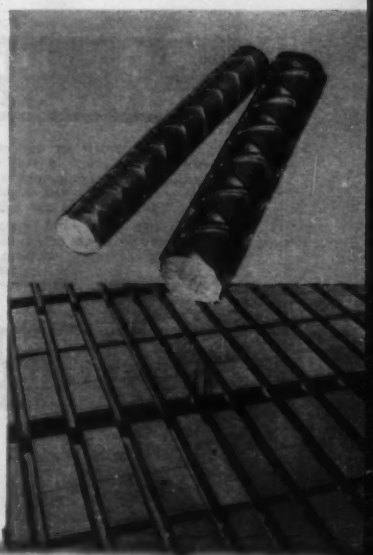


Bishop DuBourg High School—St. Louis, Missouri
Architects: Murphy & Mackey/Structural Engineer: Neal J. Campbell
Contractor: C. Rallo Contracting Company, Inc.

Ceco-Meyer Removable Steelform Construction proves more economical than solid slab or tile filler in study made for Bishop DuBourg High School in St. Louis. When a school is designed around a program planned jointly by architects and educators, it is possible to cut costs and at the same time satisfy functional and psychological needs. So goes the story of Bishop DuBourg High School. Architects Murphy & Mackey asked the school administrators to outline physical requirements and spiritual essentials. On the basis of that data, they created a pupil-centered school with a warm, human atmosphere instead of an institutional feeling. The building is four stories high, with each floor a one-grade school in itself . . . classes stacked one above the other. Common facilities, including library, shop and gymnasium, are tied in so students can reach them without walking through corridors used by other grades. With layout settled, methods of construction then got a critical eye. Floor systems studied were (1) solid slab and (2) concrete joist construction formed with (A) tile filler and (B) removable steelforms. Ceco-Meyer Removable Steelforms were selected on the basis of 31% savings in cost over solid slab and 27% over tile filler. Reasons for savings: less forming lumber, concrete, steel and labor than solid slab; less material cost than tile filler. Also the Ceco method was deemed the most practical and fastest for rigid fire-safe construction. So on your next building project consult Ceco Engineers in the preplanning stage. Chances are they can help you on advance programing so savings can be made in time, material and labor.

Underside view of concrete joists formed with Ceco-Meyer Removable Flange-Type Steelforms, showing tie-wires for ceiling attachment.



Ceco Reinforcing Steel was fabricated in accordance with design drawings. Delivery was made to the job site as required by the contractor's construction schedule, thus saving double handling on the job.

View of Ceco-Meyer Steelforms in place, ready for placement of reinforcing steel.

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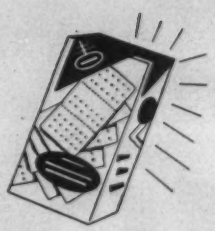
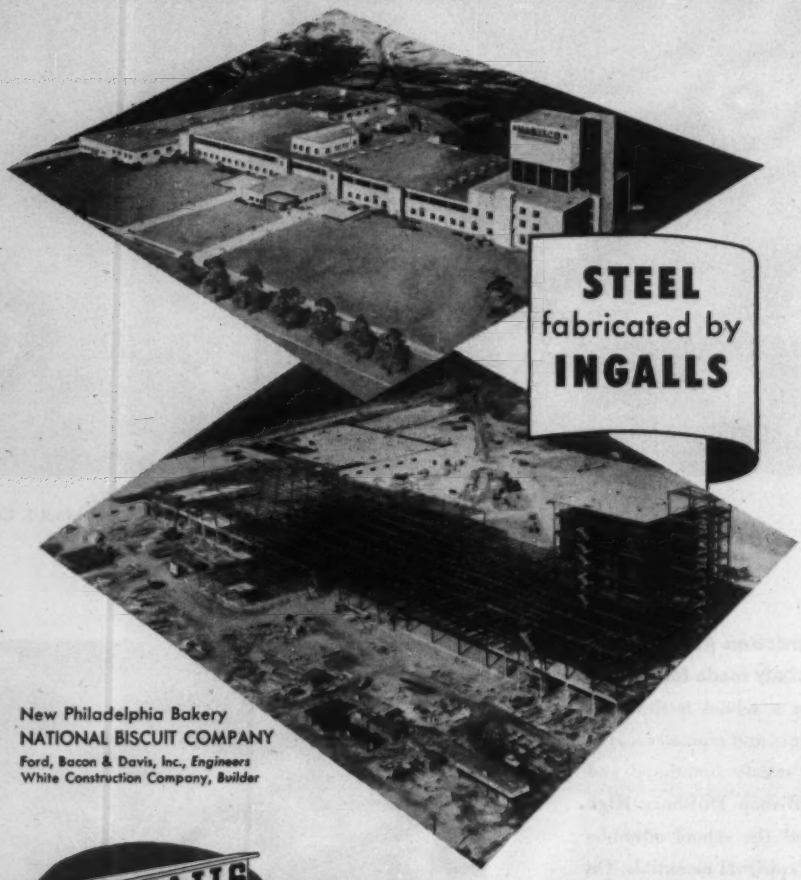


Just as famous NBC cookies and crackers come in packages, 6300 or more tons of steel were welded together to "package" the largest National Biscuit Company bakery to be built in the United States. With steel supplied by Ingalls, this giant food manufacturing plant represents one of many of Ingalls' steel fabricating services.



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NATIONAL BISCUIT COMPANY
Ford, Bacon & Davis, Inc., *Engineers*
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Sales Offices: New York, Chicago, Pittsburgh, Houston, Atlanta, New Orleans
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YOU can profit by our experience of over 50 years in Hot Dip Galvanizing. Our equipment is modern, our men are skilled and our deliveries and prices are right.

We have galvanized thousands of tons of: gratings, beams, bars, perforated screens, sections, forms, tanks, fittings, rails, fastenings, etc. *Excellent facilities for pickling and oiling.*

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CORE BORINGS
for Foundations, Dams, Bridges and all Heavy Structures
GROUT HOLES

Tinney Drilling Co.
Grafton, W. Va.

OBITUARIES

Louis L. Brown, 81, an engineer who designed foundations for the earliest New York City skyscrapers, died in Washington, Conn., Oct. 6. Brown, a native of St. Catherines, Ont., attended Toronto University. During his engineering career in New York he served as vice-president and general manager of the Foundation Co. from 1905 until 1929. In this capacity he helped develop the pneumatic process of skyscraper foundation construction and supervised foundation work for the Woolworth, Flatiron, Singer and Municipal buildings. He retired in 1929.

James W. Hartman, 65, part owner of both the Hartman Brothers Construction and Engineering Co., Castleton, and the Castleton Lumber & Builders Supply Co., Ind., died Sept. 28. Before moving to Indianapolis, he was construction manager for Gannette-Seelye-Fleming Co., a New York engineering firm. He was the 68th civil engineer to be registered in the state of Indiana.

John T. Witmer, 57, a civil engineer in Buffalo, N. Y., since 1919, died Sept. 28. For a number of years he was associated with his cousin, Christian F. Witmer, in the engineering business. He later joined Nussbaumer, Clarke & Velzy Inc., in Buffalo.

Archibald Thomson, 51, a retired civil engineer for the U. S. Public Housing Administration, died Sept. 29, in Syracuse, N. Y. Thomson received his C. E. degree from Syracuse University in 1926. After being associated with the Union Structural Steel Co., he joined the U. S. Public Housing Administration retiring in 1947.

Carl A. Keerner, 72, founder and head of Keerner Civil Engineering Co., St. Louis, Mo., died late in September. Born in Germany, he came to the U.S. in 1895 and attended the University of Missouri. He established his own engineering firm in 1912.

Armand F. Marion, 78, Seattle civil engineer died Sept. 16. He was chief engineer for the Pacific Coast Engineering Co. for 25 years, served as Seattle water superintendent for four years in the early 1930s, and was general manager of the Lake Union Drydock & Machine Works for 12 years until his retirement in 1947.

Brice H. Conner, 53, of Raleigh, N. C., an engineer with the bridge division of the North Carolina Highway Department, died Sept. 21.

UNIVERSAL FORM TIES

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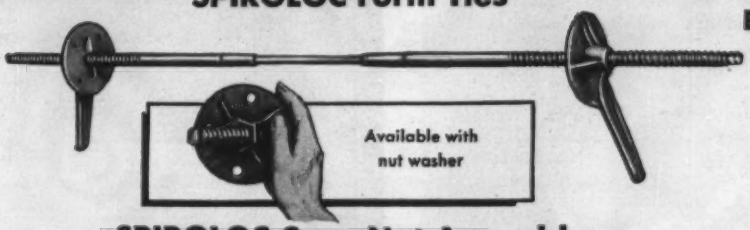


SPIROLOC Cone Nut Assembly

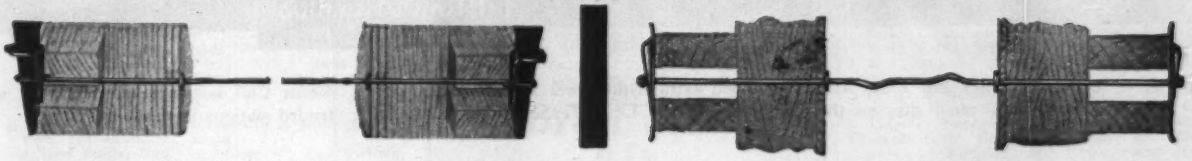
The most positive internal spreader and form tie

Faster Erection . . . Positive Holding . . . Easier Stripping

- Greater tie strength for heavy construction
- Fewer ties per sq. ft. of form area. LOWER MATERIAL and LABOR COSTS
- Positive breakbacks
- Permanent, reuseable equipment
- RENTED . . . SOLD

TWISTYES | SNAP TIES

Positive Spreader Ties for all types of Concrete Construction



Combination wedge and bearing plate . . . easy application . . . won't twist or fall off —ample take-up.

- Low cost ties for job-built or prefabricated forms
- Used with or without walers
- Accurate breakback . . . minimum plug required
- Choice of Spreader Washer . . . 7/8" flat is standard
- Rugged Twistye and Snap Tie Clamps have extra bearing surface . . . additional safety factor

Curved ends speed installation and stripping . . . long slope wedge for ample take-up. Extra nail holes permit nailing clamp in any position.

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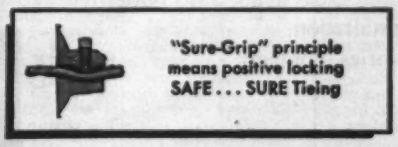
The *Most Versatile* Tie . . . At the Lowest Cost



- 2 Form clamps and a mild steel rod make a tie to handle any condition
- Wide clamp base gives more bearing on waler . . . won't "bite" at maximum loads
- Notched base permits nailing to waler

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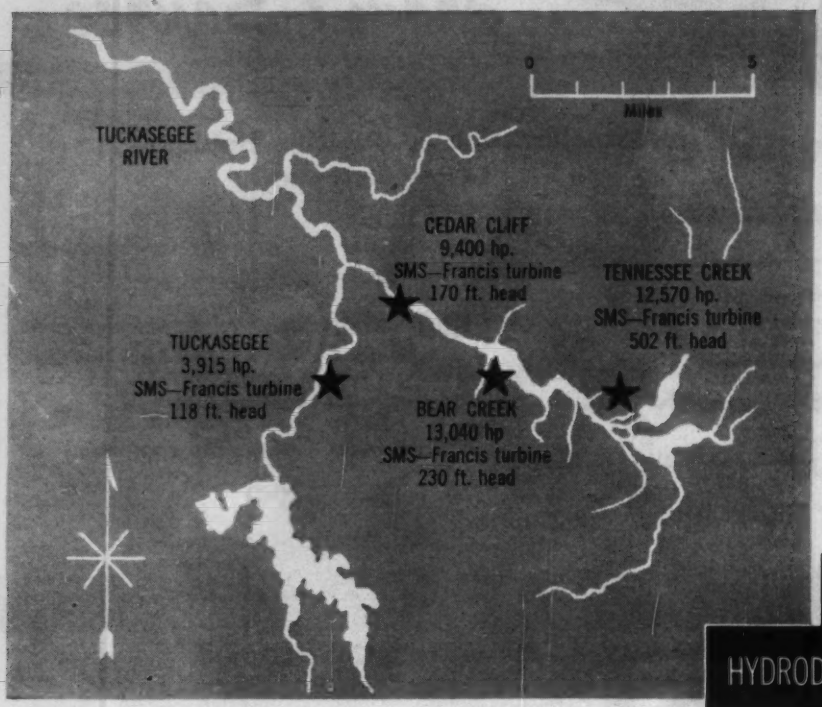
HOW ALCOA GOT LOW-COST POWER
DEVELOPING MARGINAL SITES



HYDRODYNAMICS

Between 1949 and 1952, Alcoa developed extra hydropower at low cost from these small sites on the headwaters of the Little Tennessee River.

Cedar Cliff is typical of the small, unattended stations in this development.

To get additional hydropower at minimum costs, Alcoa and its subsidiary, Nantahala Power & Light Company, have reached into the headwaters of the Little Tennessee River. As shown on the sketch map, four small sites on the east and west forks of the Tuckasegee River and Tennessee Creek now permit far greater utilization of the available water. But to make such installations pay, construction, operating and maintenance expenses were carefully planned and closely controlled.

Each of the new facilities is remotely operated from an existing station. Rock fill dams and unlined tunnels helped keep costs down, while powerhouses were built just large enough for the unit. On the SMS turbines themselves, vulnerable parts were given protective coatings of stainless steel to reduce maintenance over the years.

SMS turbines at these four stations have a total rated output of approximately 39,000 hp. All four of these are SMS-Francis types, while at Queens Creek Station a 2,250 hp. SMS-Impulse turbine operates under a 999-foot maximum gross head. SMS butterfly and relief valves supplied with the Tennessee Creek installation.
Whatever your needs for hydraulic turbines and accessories, contact S. Morgan Smith Company at York, Pennsylvania.

HYDRAULIC TURBINES
GATES & HOISTS
TRASH RAKES
PUMPS
ACCESSORIES

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ROTOVALVES
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BALL VALVES
BUTTERFLY VALVES
CONTROLLABLE-PITCH SHIP PROPELLERS

S. MORGAN SMITH

SMS

AFFILIATE: S. MORGAN SMITH, CANADA, LIMITED, TORONTO

CONSTRUCTION REPORTS

Bids Asked—Low Bidders—Contracts Awarded—First Section—

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 36, N. Y., ELSIE EAVES, Manager
J. A. MAHONEY, M. WETZEL, L. M. WINISKI, M. E. SCIORRA, F. S. DEMBEK, Reports.
J. H. WEBBER, M. R. ROESSLER, E. R. HUBER, Statistics.

NEW ENGLAND

HEAVY CONSTRUCTION—BA

† **Me., Bangor**—SHOP—BA 10/25—U. S. Eng., 857 Commonwealth Ave., Boston, Mass., shop F. M. General purpose bldg., Dow Air Force Base, ENG-19-016-56-51, $250,000-$300,000. Plans deposit $10, refundable. Lockwood-Greene Engineers, Inc., 316 Stuart St., Boston, Mass., engrs. CD 10/5.

† **Vt., Burlington**—BULK STORAGE FACILITIES—BA 10/25—U. S. Eng., 857 Commonwealth Ave., Boston, Mass., bulk storage facilities, Municipal Airport, South Burlington, ENG-19-016-56-25, est. $50,000-$100,000. Plans deposit $10. Extended date. Hayden, Harding & Buchanan, Park Square Bldg., Boston, Mass., engrs. CD 10/4.

† **R. I., Newport**—PIERS—BA 10/26—P. Wks. Office, First Naval Dist., 495 Summer St., Boston 10, Mass., rehabilitation of fuel piers, NOY 87229, Spec. 46343. Est. $73,000. Plans deposit $20. CD 9/29, under LB.

BUILDINGS—BA

Conn., West Hartford—SCHOOL—BA 11/3—Town, Bd. Educ., Dr. Edmund Thorne, Supt. Schools, 51 Memorial Rd., elementary school, New Britain Ave. near Corbin's Corner. $500,000. Willard Wilkins, 945 Asylum Ave., Hartford, archt. Henri B. VanZelm, 197 Asylum Ave., Hartford, mech. engr. CD 5/3/54.

HEAVY CONSTRUCTION—LB & CA

NEW HAMPSHIRE—Dpt. P. Wks. and Hys., Concord, **Roy C. Abbott**, Lyme, N. H., LB $143,601, hot b. conc. roadway 0.797 mi. Lebanon St., Hanover. Bids Oct. 6. CD 9/27.

▲† **Petricca Constr. Co.**, 434 West St., Pittsfield, Mass. LB $2,178,611, est. $2,500,000-$2,750,000. Hoosic River Basin flood control proj., Unit 3, North Adams, CIVENG-30-075-56-7, MASSACHUSETTS. U. S. Eng., 111 E. 16 St., New York, N. Y. Bids Oct. 5. CD 8/31.

▲ **MASSACHUSETTS**—Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston,
The Savin Constr. Corp., 10 Village St., East Hartford Conn. CA $7,401,332, est. $7,500,000. hy. and bridge, Southeast Expressway, Southampton St. to Neponset Circle, Boston and Dorchester. CD 9/23, under LB.
Keystone Constr. Co., 148 State St., Boston, Mass. LB $189,000, est. $200,000. LAUNDRY addn. alteration to existing bathhouse, 241 Dover St., BOSTON, MASS. City Parks & Recreation Dpt., 33 Beacon St., Boston, Mass. Bids Oct. 4. CD 9/15.
Richard White Sons, Inc., 70 Crescent St., West Newton, Mass. LB $258,930, est. $260,000. sewers, appurtenances, LEXINGTON, MASS. Town, Bd. Selectmen, Town Hall, Lexington, Mass. Bids Oct. 3. CD 9/27.
▲ **RHODE ISLAND**—State R. I. & Providence Plantations, Div. of Purch., Dpt. of Admin., State House, Providence,
M. A. Gammino Constr. Co., 728 Valley St., Providence, R. I., LB $1,598,954, est. $1,700,000. Bridge No. 121, bridge constr., drainage, approaches to Sakonnet River Bridge No. 250, R. I. Contr. 5523, Bid 253. Tiverton-Portsmouth. Charles A. Maguire Assoc., Turks Head Bldg., Providence, engrs. Bids Oct. 5. CD 9/27.

BUILDINGS—LB & CA

John A. Volpe Constr. Co., 54 Eastern Ave., Malden, Mass., CA $974,807, est. $800,000. Memorial STUDENT UNION bldg., DURHAM, N. H. University of New Hampshire, Durham, N. H. CD 9/26, under LB.
O. D. Purington Co., Inc., 171 Westminster St., Providence, R. I. CA $719,236, est. $700,000. Frontier Regional SCHOOL adjacent to high school, DEERFIELD, MASS. Frontier Regional School Dist., c/o supt. Schools, 222 Main St., Deerfield, Mass. CD 9/27, under LB.
▲ **Walsh Brothers**, 150 Hampshire St., Cambridge, Mass. CA Approx. $1,000,000. brick, stone, rein.-con. FACULTY RESIDENCE and AUDITORIUM, 160 W. T. Morrissey Blvd., DORCHESTER, MASS. Boston College High School, 160 William T. Morrissey Blvd., Dorchester, Mass. Maginnis & Walsh, 126 Newbury St., Boston, archts.
Green Acres, Inc., c/o Louis Beckanstein, West Hartford, Conn. Owner Builds. Approx. $600,000. Sect. 1, RESIDENTIAL development, between Winterbury Ave. and Park Rd., BLOOMFIELD, CONN.
▲ **The Amherst Corp.**, Louis Levy, pres., East Hartford, Conn. Owner Builds. $1,200,000. 80 HOUSES, 40-acre tract, EAST HARTFORD, CONN.
P. Francini & Co., Water St., Derby, Conn., LB $491,000. SCHOOLS addn. and alterations, Garden School, Garden St., and Nichols School, Nichols Ave., STRATFORD, CONN. Town, Town Mgr., Municipal Bldg., Stratford, Conn. Fletcher Thompson, Inc., 211 State St., Bridgeport, archt.

MIDDLE ATLANTIC

HEAVY CONSTRUCTION—BA

† **Del., New Castle**—BLDGS. REHABILITATION—BA 10/25—Procurement Office, 82nd Fighter Group (Air Defense) New Castle County Airport, Wilmington, rehabilitation 16 bldgs., New Castle County Airport, IFB No. 07-601-56-13. CD 9/6.
▲ **New York**—BA 10/25—Bd. Water Supply, 120 Wall St., New York, Zone 5, westerly portion of West Delaware tunnel of Delaware System, Contr. 451, 43,000 lin. ft. tunnel incl. intake channel and Shaft 1, approx. 520 ft. deep, in towns of Tompkins and Hancock, Delaware Co.; Contr. 452, 60,000 lin. ft. tunnel, incl. Shaft 2, approx. 310 ft. deep and Shaft 3 approx. 460 ft. deep in towns of Hancock and Colchester, Delaware Co. Plans deposit $5. Extended date. CD 10/4.
† **D. C., Wash.**—CORE BORINGS—BA 10/26—P. Wks. Office, Potomac River Naval Command, Naval Gun Factory, five core borings, Bldgs. 29, 47 and 54, Naval Air Station, Anacostia. Contr. NOY 91973. Plans deposit $10.
† **New York**—SPECIAL AAA FACILITIES—BA 10/27—U. S. Eng., 111 E. 16 St., New York, Zone 3, special AAA facilities, FY 1955 program, Lido Beach, Long Island, Eng. 30-075-56-23. CD 9/26.
† **Maryland**—BA 11/3—U. S. Eng., 24 St. and Maryland Ave., Baltimore, Zone 18, maintenance dredging lower thoroughfare Deal Island, Knapps Narrows, Eastern Shore, CIVENG 18-020-56-8. Plans deposit $10. CD 6/9/44.
N. Y., Bethlehem—BA 11/17—Town, Town Hall, Vly Creek reservoir, dike and dam, incl. compacted fill dike, 1,720 ft. long with maximum height 40 ft. on south branch of Vly Creek and similar earth fill dam with concrete spillway on east branch of Onesquethaw Creek, town of New Scotland, southeast of the Hamlet of New Salem. Plans deposit $20. Benjamin L. Smith & Assoc., 11 N. Pearl St., Albany, engrs. adv. ENR 10/20.

BUILDINGS—BA

▲ **N. Y., Tarrytown**—SCHOOL—BA 10/25—Bd. Educ., Sleepy Hollow High School, Broadway and Bedford Rd., North Tarrytown. $2,000,000. Perkins & Will, 171 E. Post Rd., White Plains, archts. CD 10/21/53.
Md., Baltimore—HOSPITAL—BA 10/27—Union Memorial Hospital, 33 and Calvert Sts., Zone 18, 2 story brick, concrete front and rear hospital addns., $350,000. Plans deposit $40, Jas. R. Edmunds Jr., 1027 St. Paul St., Zone 2, archt. CD 9/14.
N. Y., Maspeth—SCHOOL—BA 10/28—Bureau Constr., 42-15 Crescent St., Long Island City, Zone 1, general constr. to convert P.S. 73 into junior high school 54 Ave. and 71 St. Plans deposit $10.
▲ **N. Y., Flushing**—SCHOOL—BA 11/7—Bureau Constr., 42-15 Crescent St., Long Island City, Zone 1, general constr., plumbing and drainage, heating and ventilating, electrical work and lighting fixtures for new junior high school 189, Barclay and Sanford Aves. and 147 St. Plans deposit $40 general, $10 each for plumbing and drainage, heating and ventilating, electrical work and lighting fixtures. CD 1/21/55.

HEAVY CONSTRUCTION—LB & CA

▲† **Siegfried Constr. Co., Inc.**, 6 N. Pearl St., Buffalo 2, N. Y. CA $1,597,100. special AAA facilities, Orchard Park, NEW YORK. U. S. Eng., 111 E. 16 St., New York 3, N. Y. CD 9/1, under LB.
▲† **Joseph A. Bennett Co., Inc.**, 2 Elm Place, P. O. Box 713, Brookline Village 46, Mass. CA $1,567,500. special AAA facilities, Hamburg, NEW YORK. U. S. Eng., 111 E. 16 St., New York, N. Y. CD 9/8, under LB.
▲ **Arthur A. Johnson Corp., B. Perini & Son, and Peter Kiewit Co.**, 347 Madison Ave., New York 17, N. Y. LB $5,558,963 (3 bidders) Sect. 1; LB $9,418,937. Proposal A; LB $9,207,397. Proposal B. (3 bidders) Sect. 2, DeKalb Avenue reconstr. Brooklyn Boro, Contr. C-102, NEW YORK. New York City Transit Auth., 370 Jay St., Brooklyn 1, N. Y. Bids Oct. 4. CD 9/20;
Poirier & McLane Corp., 33 W. 42 St., New York 36, N. Y. LB $13,512,287. proposal A; LB $13,152,837. Proposal B. (3 bidders) Sect. 3. (New York).
Edenwald Contr. Co., 151-45 Sixth Rd., Whitestone, N. Y. LB $193,527. Alt. 1, playground adjacent to Brownsville Boys Club, Hegeman Ave. and Linden Blvd., Contr. B-270-155, BROOKLYN, N. Y. Comr., Parks Dpt., Arsenal Bldg., Central Park, 64 St. and Fifth Ave., New York 21, N. Y. Bids Oct. 7. CD 9/30;
Malter Contr. Co., 1407 Bassett Ave., New York 61, N. Y. LB $197,803. Alt. 2 (Brooklyn, N. Y.)
B-Ken Service, Inc., 234 Broadway, Rensselaer, N. Y. LB $118,206. replacing of electric wiring and fixtures, Bldg. Nos. 1, 2, 3, and 4, Elmira Reformatory, ELMIRA, N. Y. Bureau Contracts & Accounts, The Gov. Alfred E. Smith State Office Bldg., Albany, N. Y. Bids Oct. 6. CD 9/9.
Frank Mascali & Sons, Inc., 120 St. and 31 Ave., Flushing, N. Y. CA $715,354. (12 bidders). bridge to carry Bruckner Blvd. over right of-way of New York, New Haven & Hartford R.R. between Whitlock Ave. and Whittier St., grading, Bruckner Blvd., NEW YORK, N. Y. President Bronx Boro., Bronx County Bldg., 851 Grand Concourse, Bronx 51, N. Y. CD 9/9, under LB.
Venetian Contr. Co., 201 Barretto St., New York 59, N. Y. LB $95,952. (5 bidders). No. 5 Sect. A, grading, wid'n. areas, paving in Trinity Ave., Tinton Ave., E. 166 St., NEW YORK, N. Y. President, Bronx Boro, Bronx County Bldg., 851 Grand Concourse, Bronx, N. Y. Bids Oct. 4. CD 9/26.
† **U. S. Eng.**, 111 E. 16 St., New York 3, N. Y., cancelled bids to have been opened About Nov. 3 indefinitely, special AAA facilities, FY 1955 program, Ramsey. Serial No. ENG-30-075-56-22. NEW JERSEY. CD 9/26.
Keystone Electric Corp., Reading, Pa. LB $639,000. electrical contr. No. 518-C portal bldgs. and cut and cover sects, at T. J. Evans Tunnel northeastern extension, Lehigh and Carbon Counties, PENNSYLVANIA. Pennsylvania Turnpike Comn., 11 N. Fourth St., Harrisburg, Pa. Bids Oct. 5. CD 9/14.
Vanguard Constr. Co., 369 Lexington Ave., New York, N. Y. CA $549,407. Contr. 4, filter plant addn. and reinforcing mains, CHESTER, PA. Chester Municipal Water Auth., 5 and Welsh Sts., Chester, Pa. CD 9/2, under LB.
Cumberland Contg. Co., Cumberland, Md. CA $165,715. water main extens., accessories to Pittsburgh Plate Glass Co. plant, NORTH BRANCH, MD. Mayor and City Council, Cumberland, Md. CD 12/12/46.
▲† **C. J. Langenfelder & Son, Inc.**, 8427 Pulaski Hy., Baltimore, Md. LB $3,809,957. imprv. runways, taxiway and aprons, Naval Air Station, PATUXENT RIVER, MD. Dist. P. Wks. Office, Potomac Naval Command, Naval Gun Factory, Wash., D. C. Bids Oct. 5. CD 9/12.
J. O. and C. M. Stuart, Inc., 3121 South St. N. W., Wash., D. C., CA $214,959. two bridges over Watts Branch at 44 St. and Gault Pl. N. E., WASH., D. C. Govt., Dpt. Hys., 499 Pa. Ave. N. W., Wash., D. C. Bids Oct. 5. CD 9/20.

PROJECTS COVERED

By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $44,000; other public works $73,000; industrial buildings $93,000; other buildings $344,000. Also Foreign projects of $100,000 and more in size of interest to American contractors.

By Regions & Classes of Construction

(In order of Listing)

BIDS ASKED
LOW BIDDERS
CONTRACTS AWARDED

New England	**Middle West**
Middle Atlantic	**West of Mississippi**
South	**Far West**

PROPOSED WORK

Water Supply	**Public Buildings**
Sewers, Waste Disposal	**Mass Housing**
Bridges	**Commercial Buildings**
Streets & Roads	**Industrial Buildings**
Earthwork, Waterways	**Unclassified**

In These Stages

PROPOSED WORK: Before and including appointment of engineers or architects.
BIDS ASKED: BA (new announcements only). For full calendar, see also preceding issues.

LOW BIDDERS: LB On jobs below $500,000 in value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.

CONTRACTS AWARDED: CA Except awards to low bidders previously reported in low bidder stage.

CD dates shown are of Construction Daily issue in which last previous report was published.

OWNERS, ENGINEERS, ARCHITECTS, CONTRACTORS are invited to report their new jobs for listing in these reports when they meet or exceed the size minimums shown above. Address these news releases to J. A. Mahoney, REPORTS, ENGINEERING NEWS-RECORD, 330 W. 42 St., New York 36, N. Y.

Symbols and Abbreviations Include:

†	**Federal Government**
▲	**Project of $1,000,000 or over.**
ENR	**Engineering News-Record**
CD	**Construction Daily**

For additional reports see Construction Daily.

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Hughes-owned fleet of scows and cargo barges is conveniently spotted along the Atlantic Coast for quick and efficient performance. Sizes from 105 ft. to 140 ft. in length, 32 ft. to 50 ft. in width. Also all types of work boats, tugs, utility vessels.

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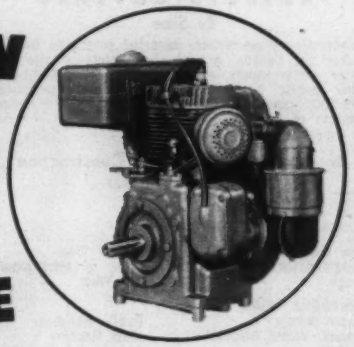
This is the NEW WISCONSIN

Model ACN, 5½ H. P. Single Cylinder HEAVY-DUTY Air-Cooled ENGINE



Here is a new, light weight engine, designed and built to Wisconsin heavy-duty standards in all details, offering original equipment builders and engine users maximum power advantage and performance in a 2.3 to 5.6 hp. range at 1600 to 3600 rpm.

Like all Wisconsin Engines, the Model ACN has the built-in Lugging Power that hangs on through the shock load pinches and keeps the job moving without stalling. With a 2⅝" bore x 2¾" stroke, it has a 14.88 cu. in. displacement.

Heavy-duty features include tapered roller main bearings at BOTH ends of the crankshaft; rotary type high tension OUTSIDE Magneto with Impulse Coupling for quick, all-weather starts at low cranking speed, pump-circulated splash lubrication *plus* efficient AIR-COOLING from extreme sub-zero to 140° F.

***Perhaps this is just the power component you have been looking for — power to fit the machine; power to fit the job.* Write for Bulletin S-179.**

WISCONSIN MOTOR CORPORATION

World's Largest Builders of Heavy-Duty Air-Cooled Engines

MILWAUKEE 46, WISCONSIN

BUILDINGS—LB & CA

▲ **Jonwal Constr. Co.**, 1527 Franklin Ave., Mineola, N. Y. CA **$1,331,646.** junior high SCHOOL, West Babylon, BABYLON, N. Y. Bd. Educ., Babylon, N. Y. Knappe & Johnson, 390 E. 150 St., New York 55, N. Y., archts. Bids Sept. 21. CD 1/21/53.

▲ **Planet Constr. Corp.**, 11 W. 42 St., New York 36, N.Y. CA **$1,507,000.** (10 bidders) general constr., P. S. 169 SCHOOL 212 and 23 Ave., BAYSIDE, N. Y. Bd. Educ., Bureau Constr., 42-15 Crescent St., Long Island City, N. Y. CD 9/1, under LB.

The John W. Cowper Co., Inc., 775 Main St., Buffalo, N. Y. LB **$909,230.** general contract, STOREHOUSE and BAKERY Buffalo State Hospital, BUFFALO, N. Y. Bureau Contracts & Accounts, The Gov. Alfred E. Smith State Office Bldg., Albany, N. Y. Bids Oct. 6. CD 9/16.

Rutgers Homes, c/o Long Island Homes, 168-12 Hillside Ave., Jamaica 32, N. Y., Owner Builds, **$350,000.** 20 HOUSES on tract on Vincent Rd., HICKSVILLE, N. Y.

▲ **Ardmore Constr. Co.**, c/o Stanley H. Klein, archt., 89-31 161 St., Jamaica, N. Y. CA **$7,000,000.** 640 HOUSES on tract on Bellmore Ave., ISLIP TERRACE, N. Y.

▲ **Caristo Constr. Corp.**, 26 Court St., Brooklyn 2, N. Y. CA **$4,267,000.** (4 bidders) general constr., Aviation Trades High School, Queens Blvd. 47 Ave., 35 and 36 Sts., LONG ISLAND CITY, N. Y. Bd. Educ., Bureau Constr., 42-15 Crescent St., Long Island City 1, N. Y. Grand total $5,717,140. CD 9/1, under LB; **Afgo Eng. Corp.**, 475 Adelphi St., Brooklyn 17, N. Y. CA **$510,340.** (8 bidders) heating (Long Island City, N. Y.); **Frederick Jackson, Inc.**, 25 W. 43 St., New York 36, N. Y. CA **$939,800.** (13 bidders) electric. (Long Island City, N. Y.).

Henry Peters & Louis Marshak, c/o Herman H. York, archt., 90-04 161 St., Jamaica, N. Y., Owner Builds, **$400,000.** 25 HOUSES on tract at Sunrise Hy. and Hemlock St., MASSEPEQUA PARK, N. Y.

▲ **Gens-Jarboe, Inc.**, 101 Park Ave., New York 17, N. Y., CA Est. **$2,000,000.** 7 story CLINIC, 5 story nurses RESIDENCE, 3 story RESIDENCE, NEW YORK, N. Y. St. Clare's Hospital, 415 W. 51 St., New York 19, N. Y. CD 4/5.

Reo Holding Corp., 975 Lexington Ave., New York, N. Y., Owner Builds, **$350,000.** APARTMENT at 435-43 E. 85 St., NEW YORK, N. Y. George G. Miller, 125 W. 45 St., New York 19, N. Y., archt.

Stewart M. Miller, Inc., 47 S. Riverside Ave., Croton on Hudson, N. Y. CA Est. **$350,000.** SCHOOL, NEWBURG, N. Y. The Church of St. Mary, 182 South St., Newburgh, N. Y. Gordon Marvel, Newburgh, N. Y., archt.

A. M. Hunter & Son, Inc., 19 S. Dutcher St., Irvington, N. Y. CA Est. **$350,000.** SCHOOL addn., POUGHKEEPSIE, N. Y. Church of St. Mary, S. Hamilton and Church Sts., Poughkeepsie, N. Y.

▲ **A. Friederich & Sons Co.**, 710 Lake St., Rochester, N. Y. CA Est. **$12,000,000.** RUSSELL STATION, ROCHESTER, N. Y. Rochester Gas & Electric Co., 89 East Ave., Rochester 4, N. Y. Gilbert Associates, 607 Washington St., Reading, Pa., consult. engrs. CD 10/7.

P. M. Hughes & Sons, Inc., Harwood Bldg., Scarsdale, N. Y. CA Est. **$700,000.** CHURCH SCHOOL auditorium, Heathcote, SCARSDALE, N. Y. Roman Catholic Church of St. Pius X, Ridgedale Rd., Scarsdale, N. Y. Edward Fleagle, 18 S. Broadway, Yonkers, archt.

John McShain, Inc., 3 W. Franklin St., Baltimore 1, Md. LB **$528,200.** 1 and 2 story, brick, concrete, steel Glenmount SCHOOL No. 235 addn., BALTIMORE, MD. City, Bureau Bldg. Constr., 410 Municipal Bldg., Baltimore 2, Md. Bids Oct. 5. CD 9/20.

Chas. E. Brohawn & Bros., 200 Boundary Ave., Cambridge, Md. CA **$136,600.** concrete, steel, masonry FACTORY, CAMBRIDGE, MD. Rob Roy Co., Cambridge, Md. Johannes & Murray, 855 Pershing Drive, Silver Spring, Md., archts.

Rand Building Co., R. D. 6, Dulany Rd., Towson 4, Md., Separate Contracts. **$748,000.** fifty-four frame DWELLINGS, Goucher Blvd., TOWSON, MD.

Ernest DiSabatino & Sons, Inc., 2601 W. 4th St., Wilmington, Del., LB **$121,850.** WAREHOUSE, Delaware State Hospital, WILMINGTON, DEL. Delaware State Hospital, Farnhurst, Wilmington, Del. G. Morris Whiteside 2nd and William G. Moeckel and Joseph E. Carbonell, 909 Tatnall St., Wilmington, Del., archts. CD 10/30/52.

SOUTH

HEAVY CONSTRUCTION—BA

† **Georgia and South Carolina**—BA 10/25—U. S. Eng., 200 E. St. Julian St., Savannah, Ga., automatic river stage reporting sys., Clark Hill Proj., Savannah River, CIVENG-09-133-56-12. Extended date. CD 10/7.

† **Miss., Greenville**—SHOP—BA 10/25—U. S. Eng., 2301 Grant St., Mobile, Ala., engine build-up shop, Greenville Air Force Base, ENG-01-076-56-7. CD 8/24.

† **Va., Portsmouth**—FLOORS REPLACEMENT—BA 10/25—P. Wks. Office, Fifth Naval Dist., U. S. Naval Base, Norfolk, Zone 11, replacement of floors, Bldgs. M-8 and M-9, Norfolk Naval Shipyard, NOY 91351, Spec. 48281. Plans deposit $10.

(Continued on pg. 118)

By-Passing Buffalo Bottlenecks

This is Buffalo's High-Level Bridge, shown shortly after Bethlehem crews completed erection of the steel superstructure. By avoiding street-level congestion and bridge openings, the viaduct will speed motorists between center-city and areas to the south, including lakefront industrial plants and suburban communities. It also connects with the Niagara section of the New York Thruway.

The 1.1-mile viaduct required 11,500 tons of Bethlehem structural steel, including four giant plate girders 208 ft long, 12½ ft deep and weighing 167 tons. With the addition of cantilever arms they form the two 348-ft suspended spans—second longest in the country—which cross the Buffalo River and the Ship Canal.

Bethlehem handled the fabrication and erection of the steelwork for the New York State Department of Public Works, under whose supervision the High-Level Bridge was designed and built. Bates & Rogers Construction Corporation, Chicago, is general contractor.

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BETHLEHEM STEEL

(Continued from pg. 116)

† **N. C., Goldsboro**—TRAINING BLDG.—BA 10/27—U. S. Eng., 308 Customhouse, Wilmington, flight simulator training bldg. and A GAR-1 storage bldg., Seymour Johnson Air Force Base, ENG-31-075-56-22. Plans deposit $5.20. CD 9/16.

† **S. C., Myrtle Beach**—RAILROAD—BA 11/2—U. S. Eng., 31 Customhouse, Charleston, railroad, Myrtle Beach Air Force Base, 38-081-56-12. CD 10/4.

† **S. C., Sumter**—SQUADRON OPERATIONS—BA 11/2—U. S. Eng., 31 Customhouse, Charleston, squadron operations bldg., Shaw Air Force Base, ENG-38-081-56-13. CD 9/29.

† **S. C., Myrtle Beach**—SQUADRON HEADQUARTERS—BA 11/3—U. S. Eng., 31 Customhouse, Charleston, squadron headquarters bldg., Myrtle Beach Air Force Base, ENG-38-081-56-14. CD 9/29.

† **S. C. Myrtle Beach**—N.C.O. CLUB—BA 11/4—U. S. Eng., 31 Customhouse, Charleston, N.C.O. club, Myrtle Beach Air Force Base, ENG-38-081-56-15. CD 9/29.

† **S. C., Myrtle Beach**—SMALL ARMS RANGE—BA 11/4—U. S. Eng., 31 Customhouse, Charleston, small arms range, Myrtle Beach Air Force Base, ENG-38-081-56-16. CD 9/30.

† **N. C. Goldsboro**—CLUB, QUARTERS—BA 11/9—U. S. Eng., 308 Customhouse, Wilmington, officers' club, officers' quarters, recreational gymnasium, Seymour Johnson Air Force Base, ENG-31-075-56-23. Plans deposit $20.80. CD 9/16.

† **N. C., Goldsboro**—BUILDING REHABILITATION—BA About 11/11—U. S. Eng., 308 Customhouse, Wilmington, rehabilitation of Bldg. T-2220 for AIO bldg., Seymour Johnson Air Force Base, ENG-31-075-56-17. Plans deposit $2.40. CD 9/16.

† **S. C., Myrtle Beach**—COLD STORAGE—BA About 11/12—U. S. Eng., 31 Customhouse, Charleston, cold storage bldg., Myrtle Beach Air Force Base, ENG-38-081-56-21. CD 9/29.

† **S. C., Sumter**—WAREHOUSE—BA About 11/14—U. S. Eng., 31 Customhouse, Charleston, base warehouse, Shaw Air Force Base, ENG-38-081-56-22. CD 9/25/51.

† **Fla., Tampa**—PARKING APRON—BA On Or About 11/16—U. S. Eng., P. O. Box 4970, Jacksonville, Zone 1, parking apron, MacDill Air Force Base, ENG-08-123-56-25. CD 9/19.

† **N. C., Fort Bragg**—BA 11/16—U. S. Eng., 308 Customhouse, Wilmington, sanitary sewer outfall, install 36-in. pipe, 6,500 lin. ft.; 12,000 lin. ft. 30-in. pipe; other misc. items, ENG-31-075-56-33. Plans deposit $6.40. CD 12/26/51 under Public Buildings.

† **S. C., Myrtle Beach**—M & S GROUP HEADQUARTERS—BA About 11/16 U. S. Eng., 31 Customhouse, Charleston, M and S group headquarters., Myrtle Beach Air Force Base, ENG-38-081-56-23. CD 9/29.

† **S. C. Myrtle Beach**—OFFICER'S CLUB—BA About 11/18—U. S. Eng., 31 Customhouse, Charleston, 8,960 sq. ft. officers club, Myrtle Beach Air Force Base, ENG-38-081-56-25. CD 9/29.

BUILDINGS—SLC

La., West Monroe—SHOPPING CENTER—Office Wm. King Stubbs, archt., Bernhardt Bldg., Monroe, soon lets contract 60,000 sq. ft. masonry shopping center incl. 8 stores, Cypress, Crosley, and Trenton Sts., for J. W. McLemore Jr., Winnsboro, La.

HEAVY CONSTRUCTION—LB & CA

E. P. Warren, Jr., Warwick, Va., LB $149,779, sewage disposal plant, WARWICK, VA. City, Warwick, Va. Philip D. Freeman, 4901 Colly Ave., Norfolk, Va., engr. Bids Oct. 4.

Sanitary Bd. of City, City Bldg., Charleston, W. Va., rejected bids Aug. 26, one flush-keen sewage ejector sys.; c.i. pipe for Unit 1, Sub-section 5, lift station, siphon and force mains, CHARLESTON, W. VA.

City, City Hall, Huntington, W. Va., rejected bids Sept. 10, 32 mi. street resurf., LB $642,696. HUNTINGTON, W. VA. Will re-advertise. CD 9/19 under LB.

† **H. B. Blanks Constr. Co.**, Box 37, Vidalia, La. LB $363,859. (2 bidders) approx. 1,970,000 cu. yd. earthwork on west bank of Mississippi River, Tensas Parish, Inv. 56-22, LOUISIANA. U. S. Eng., Box 60, Vicksburg, Miss. Bids Sept. 22. CD 8/30.

Markwell & Hartz, 2224 Central Ave., Memphis, Tenn., LB $440,899. (7 bidders) sewerage treatment plant, EUNICE, LA. Town, Eunice, La. Bids Sept. 21. CD 9/8.

Clement Betpouey Jr. & Co., 1432 National Bank of Commerce Bldg., New Orleans, La. CA $220,965. sewer and water main Projs. Contr. 1 approx. 9 mi. sewer extens., incl. lift stations, sewerage imprvs., Contr. 2 apropx. 4 mi. water extens., related imprvs., MANDEVILLE, LA. Town, Mandeville, La. J. M. Fourney, Hammond, La., engr. Bids July 12, awarded Sept. 26.

▲ **Boh Bros. Constr. Co.**, 2400 Cypress St., New Orleans, La. LB $1,141,648. (3 bidders) sanitary sewer sys. for sub-sewerage Dist. No. 1, METAIRE, La. Sewerage Dist. No. 1, 600 Helois Ave., Metaire, La. Bids Sept. 22. CD 8/30;
Binnings Constr. Co., 816 Howard Ave., New Orleans, La. LB $698,640. (3 bidders) sewerage treatment plant for sub-sewerage Dist. No. 1 (Metaire, La.).

▲ **John Wile Constr. Co.**, 826 Humler St., Louisville, Ky. LB $1,158,750. (8 bidders) Contr. A-1, addn. to filter plant, Contr. A-2, tunnel, LOUISVILLE, KY. Louisville Water Co., S. Third St., Louisville, Ky. Bids Oct. 6. CD 9/12;
Geo. A. Bass Constr. Co., Birmingham, Mich. LB $331,500. (8 bidders). Contr. B, filter equip. for filter plant addn. (Louisville, Ky.);
Dracco Corp., 4063 E. 116 St., Cleveland, O. LB $47,142. (3 bidders). conveyor equip. for filter plant addn. (Louisville, Ky.).

BUILDINGS—LB & CA

Harry B. Graham, Charlottesville, N. C., LB $364,643, 2-story brick, masonry, structural steel TRAINING CENTER, CHARLOTTESVILLE, VA. American National Red Cross, 17 St., between D and E Sts., N.W. Wash. 25, D. C. Bids Oct. 5. CD 9/14.

Kenhill Constr. Co., 307 Duffy St., Charleston 4, W. Va., CA $854,000. OFFICE, Quarrier and Brooks Sts., CHARLESTON, W. VA. Doctors Building, Inc. Kanawha Bank & Trust Bldg., Charleston, W. Va. Bids Aug. 23. CD 7/19.

George A. Caldwell, Box 477, Baton Rouge, La. LB $595,831. (7 bidders) brick, steel, physical, medicine, polio and rehabilitation BLDG. at Baton Rouge General Hospital, BATON ROUGE, LA. Baton Rouge General Hospital, 3600 Florida St., New Orleans, La. Bids Sept. 29. CD 8/24.

J. E. Ratcliff, Box 1943, Alexandria, La. LB $776,800. (9 bidders). white male RECEIVING Bldg. at Central Louisiana State Hospital, Proj. 1-5 CH-1, PINEVILLE, LA. State Bldg. Auth., Capitol Bldg., Baton Rouge, La. Bids Sept. 27. CD 9/8.

▲ **G. E. Bass & Co.**, Box 1033, Jackson, Miss. LB $1,074,033. est. $1,500,000. SCIENCE Bldg. at Louisiana Polytechnic Institute along Adams Blvd. across West Arizona Ave., RUSTON, LA. State Bldg. Auth., State Capitol, Baton Rouge, La. Bids Sept. 27. CD 8/29.

Henry C. Beck Co., First National Bank Bldg., Dallas, Tex. CA $505,175. 3 story, bsmnt., penthouse, masonry, steel, CLUB, SHREVEPORT, LA. Shreveport Club, 410 Travis St., Shreveport, La. Awarded Sept. 26. CD 8/23, under LB.

▲† **Blount Bros. Constr. Co.**, Bell Bldg., Montgomery, Ala. CA $1,530,000 (3 bidders). atomic energy PLANT, Proj. C-340, PADUCAH, KY. Atomic Energy Comn., 1901 Constitution Ave. N.W., Wash., D. C. Bids Sept. 30, awarded Oct. 3. CD 10/7, under LB.

MIDDLE WEST

HEAVY CONSTRUCTION—BA

▲† **Ind., Hammond**—MISC. BLDGS., ETC.—BA On Or About 10/28—U. S. Eng., 475 Merchandise Mart, Chicago 54, Ill., misc. bldgs., structures and related work, (a) operational (1) three approx. 3,900 sq. ft. underground storage structures; (2) one 1-story frame, 800 sq. ft. generator bldg.; (3) one 1-story 1,400

(Continued on pg. 120)

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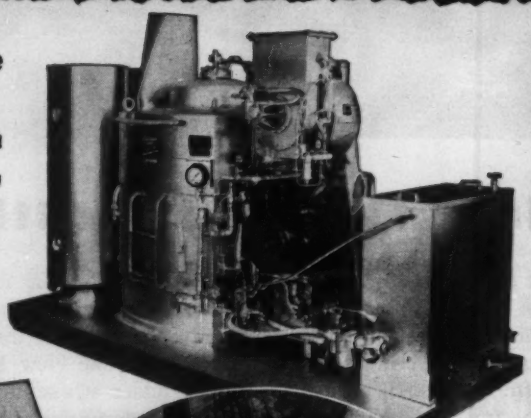

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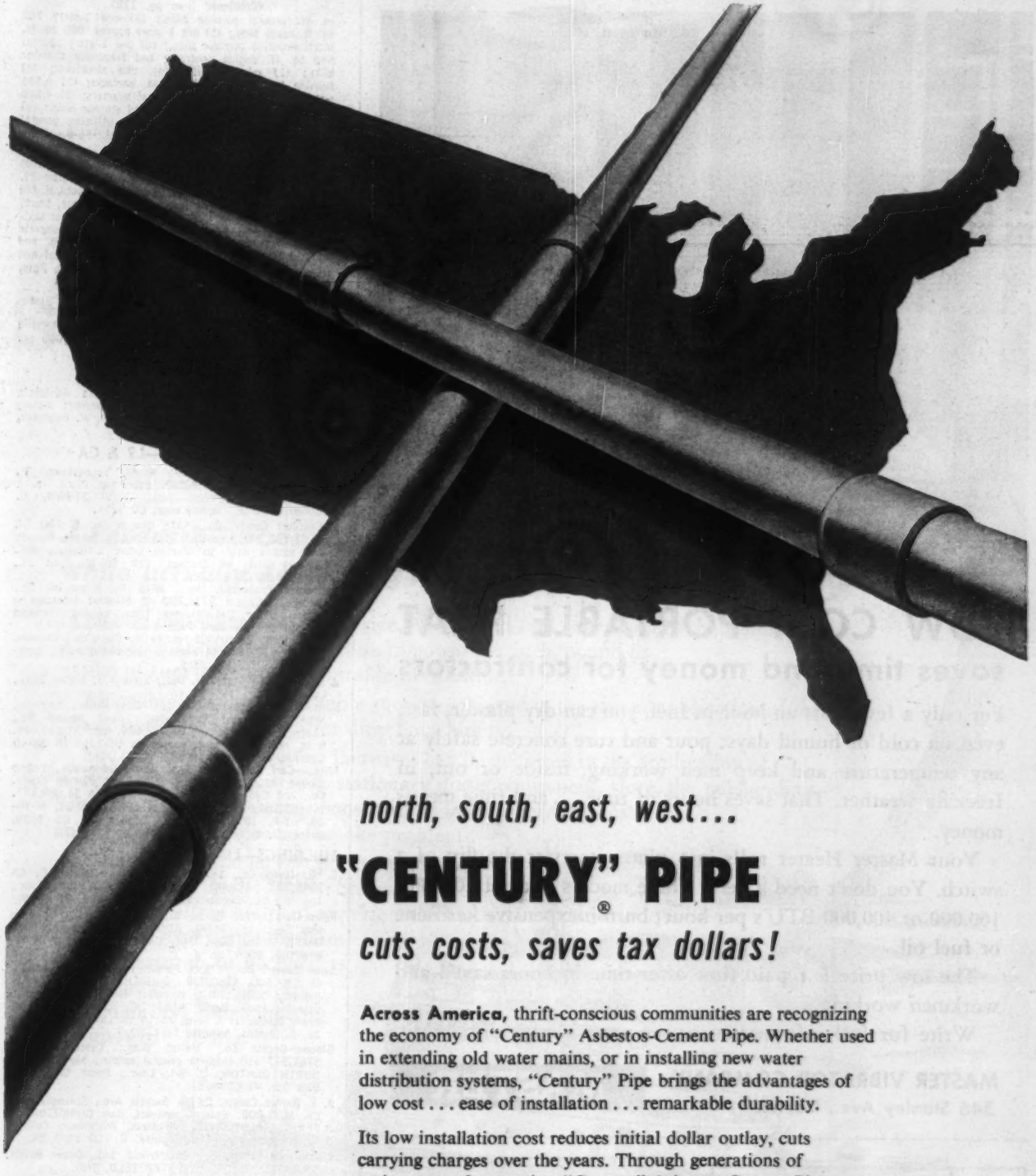

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(Continued from pg. 118)

sq. ft. general purpose bldg.; (4) one 1-story 700 sq. ft. ready bldg.; (5) one 1 story approx. 800 sq. ft. interconnecting corridor bldg.; (6) one 1 story approx. 540 sq. ft. engine generator and frequency chamber bldg.; (7) misc. small bldgs. and structures; (b) housing (1) 5,400 sq. ft. E. M. barracks; (2) 8,300 sq. ft. E. M. barracks and officers' quarters; (3) 4,200 sq. ft. administration recreation and storage bldg.; (4) 2,550 sq. ft. mess hall; (c) exterior utilities, general site imprvs., Serial No. ENG-11-032-56-8. Plans deposit $100.

▲† O., Wilmington—CNR FACILITIES—BA On Or About 11/15—U. S. Eng., 237 Fourth Ave., Huntington 19, W. Va., CNR facilities incl. crash and structural fire station, pump station, underground avgas storage, truck fill stands, operational parking apron, apron access taxiway, primary taxiway, cross wing taxiway, concrete pavement, grading, drainage, airfield lighting and marking, hydrants, connections to water electrical and sewage facilities, etc., Clinton County Air Force Base, ENG-46-022-56-7. CD 8/22.

BUILDINGS—BA

Ill., Warrensville—FACTORY—Bids Asked—Warrensville Window Co., Warrensville, 1 and 2 story 20,000 sq. ft. factory. $125,000.

BUILDINGS—SLC

Ill., Chicago—SCHOOL, etc.—Santa Maria Adolorata Parish, 648 N. May St., soon lets contract 3-story school and gymnasium, $400,000. Joseph W. Bagnuolo, 6968 North Ave., archt.

HEAVY CONSTRUCTION—LB & CA

Mahoning Co., Comrs. Court House, Youngstown, O., Own Forces, Est. $218,000. Boardman Ditch No. 1 drainage in Boardman Twp., YOUNGSTOWN, O. Samuel Gould Jr., county engr. CD 5/24.

▲ Santucci Constr. Co., 5025 Church St., Skokie, Ill. LB $1,796,300, (3 bidders) intercepting sewers, Howard Ave. extend west to Morton Grove CHICAGO, ILL. Sanitary Dist. of Chicago, 910 S. Michigan St., Chicago, Ill. CD 1/2/53;
Michael Pontarelli, Inc., 4248 N. Kilpatrick St., Chicago, Ill., LB $722,700 (2 bidders) intercepting sewers, upper Des Plaines River, serving Harwood Heights and Norwood Park areas (Chicago, Ill.);
Independent Constr. Co., 1249 N. Clark St., Chicago, Ill., LB $127,835 (4 bidders) controlling works, Lockport addn. (Chicago, Ill.).

▲ MICHIGAN—State Hy. Dpt., Stevens T. Mason Bldg., Lansing,
Mich.—Pierson Contg. Co. 200 Eddy Bldg., Saginaw, Mich. and Louis Garavaglia, 24240 Mound Rd., Center Line, Mich. CA $1,072,624. est. $1,200,000. 9 in. uniform c. conc. paving on US-12, IN 38-40 C13-RN, etc., Jackson Co.;
Mich.—Carl Goodwin & Sons, Louis Garavaglia, 24240 Mound Rd., Center Line, Mich. and Pierson Contg. Co., 200 Eddy Bldg., Saginaw, Mich. CA $1,059,147. est. $1,180,000. 9 in. dual c. conc. on M-21, M-70-20 C3-R, IN 70-61, etc., Ottawa Co. CD 9/29, under LB.

BUILDINGS—LB & CA

G. G. Danis Co., 1518 E. First St., Dayton, O. CA $345,728. SCHOOL, BROOKVILLE, O. Bd. Educ., 106 Hill St., Brookville, O. Bids July 19. CD 6/29.

Ferro Corp., 4150 E. 56 St., Cleveland 5, O., rejected bids Sept. 15, BLDG. ADDN. to house Ferro Engr. Div. & Allied Engr. Div., CLEVELAND, O. Will readvertise. CD 9/12.

Swan Constr. Co., 17135 Fernshaw Ave., Cleveland 11, O. LB Est. $350,000. CHURCH, educational bldg. imprvs., CLEVELAND, O. West Blvd. Congregational Church, 3909 Rocky River Dr., Cleveland 11, O. Erwin O. Lauffer & Sons, 20119 W. Lake Rd., Cleeland 16, O., archts. Awarded Sept. 29.

Gibbons-Grable Co., Mellet Bldg., Canton, O. LB $761,377 (10 bidders) general constr., high SCHOOL, NORTH CANTON, O. Bd. Educ., North Canton, O. Bids Oct. 4. CD 9/8.

J. I. Barnes Constr. Co., 6 Bechtle Ave., Springfield, O. CA $622,000. general contract, two DORMITORIES, SPRINGFIELD, O. Bd. Trustees, Wittenberg College, N. Wittenberg Ave., Springfield, O. CD 10/5/54.

Chesterfield Lumber Co., Chesterfield, Ind., Owner Builds. $400,000. HOMES, CHESTERFIELD, IND.

Oaklandon Homes, Inc., Oaklandon, Ind., Owner Builds, $800,000. HOMES in new addn. joining OAKLANDON, IND.

Oaklandon NE Corp., Oaklandon, Ind., Owner Builds. $450,000. HOMES, OAKLANDON, IND.

Herlee Constr. Co., 10931 S. Western St., Chicago, Ill. CA $700,000. 50 HOMES, CHICAGO, ILL. Roberts Land Development Co., 6622 S. Park Ave., Chicago, Ill. Floyd Evans, 8317 S. Prairie Ave., archt. Awarded Oct. 3.

▲ Clearing Realty Co., 6248 S. Central St., Chicago, Ill., Own Forces. $24,000,000. 1,480 HOMES, DOLTON, ILL.

▲ Ladd Enterprises, c/o Baird & Harner, 215 N. Dearborn St., Chicago 1, Ill., Own Forces. $5,400,000. 300 HOMES, near LIBERTYVILLE, ILL.

▲ Anko Constr. Co., 5533 W. North Ave., Chicago, Ill., Own Forces, $1,000,000. 40 HOMES, GLEN ELLYN, ILL.

Ockerlund Constr. Co., 4911 Lincoln Ave., Chicago, Ill. CA $407,208, Grosse Point Grade SCHOOL, Grosse Point Rd. and Monroe St., MORTON GROVE, ILL. School District 69, Morton Grove, Ill. Awarded Oct. 3. CD 3/30.

(Continued on pg. 122)

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(Continued from pg. 120)

▲ Hutter Constr. Co., 134 Western Ave., Fond du Lac, Wis., CA $3,000,000. 5 story 61x65 ft., Northwest wing, 6 story 60x72 ft. administration wing and penthouse, HOSPITAL ADDNS., OSHKOSH, WIS. Mercy Hospital, 185 Hazel St., Oshkosh, Wis. Hills, Gilbertson & Hayes, 6009 Wayzata Blvd., Minneapolis, Minn., archts.

WEST OF MISSISSIPPI

HEAVY CONSTRUCTION—BA

† Mo., Grandview—APRON PARKING—BA 10/26—U. S. Eng., 1800 Federal Office Bldg., Kansas City, Mo., apron parking, clearing, grubbing, preparing site, excav., storm drains, subdrains, rigid pavement and seeding, Grandview Air Force Base, Spec. 56-30. $450,000-$600,000. CD 9/30.

† Nebraska—BA 10/26—U. S. Eng., 1709 Jackson St., Omaha, Neb., Boat basin in Gavins Point Reservoir, Knox Co., Inv. 24-066-56-44. CD 5/25/44 under South Dakota.

Texas—TELEPHONE LINES—BA 11/1—Mid State Telephone Co., c/o World-Wide Cartograph Inc., International Airport, San Antonio, Zone 9, 145.48 mi. rural pole telephone lines, Milam and Williamson Counties, $90,000.

† Arkansas—BA 11/8—U. S. Eng., 300 Broadway, Little Rock, water supply, Bull Shoals Dam, Bull Shoals, under $100,000. CD 11/13/51.

† Ark., Jacksonville—GYMNASIUM—BA About 11/9—U. S. Eng., P. O. Box 867, Little Rock, recreational gymnasium No. 1, Little Rock Air Force Base, Eng. 03-050-56-21.

BUILDINGS—BA

Neb., Beatrice—HOSPITAL—BA 10/28—Mennonite Hospital, Beatrice, hospital addn. $640,000. Extended date. Davis & Wilson, 225 Stuart St., Lincoln, archts. CD 9/28.

HEAVY CONSTRUCTION—LB & CA

MINNESOTA—State Hy. Dpt., 1246 University Ave., St. Paul,

Moen Bros., Inc., Moorhead, Minn. LB $343,456. grading 10½ mi. between Hawley and Lake Park, T.H.10, Becker and Clay Counties. (Correction-Low bidder). CD 9/27, under LB.

† O. B. Ashbach & Sons, 2975 Hamline Ave. N., St. Paul, Minn. LB $358,130. (2 bidders) paving facilities, Duluth Air Force Base, Eng. 21-018-56-4, DULUTH, MINN. U. S. Eng., 1217 Post Office and Custom House, St. Paul, Minn. Bids Oct. 4. CD 9/16.

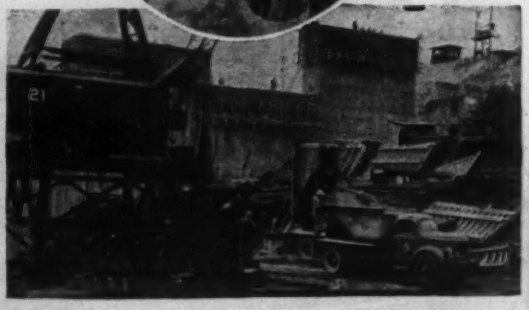
Lametti & Son, 211 N. Pascal St., St. Paul, Minn. LB $310,140. (8 bidders) sanitary sewer collection sys.; LB $128,689 (9 bidders), trunk sewer, OSSEO, MINN. Village, R. Stetzler, clk., Osseo, Minn. Village, R. Stetzler, clk., Osseo, Minn. Bids Oct. 3. CD 9/15.

T.V.A. HAULS MASS CONCRETE 8 Miles In DUMPCRETES...

Top quality and uniform concrete is delivered to Ft. Patrick Henry Dam in Tennessee after 8-mile haul in non-agitating units. Of the 75,000 yards of air-entrained concrete, about ⅔ contains 6" aggregate. Ten Dumpcretes haul 4.4 cu. yds. per load—about 600 yds. per 7½ hour shift! TVA now uses 30 high-speed rugged Dumpcretes on this and five other projects. Write today for complete report on this job.

6" aggregate concrete uniform and with no segregation

Plant located 8 miles from pour



Dumpcrete's vertical dumping angle assures fast, clean discharge

MAXON DUMPCRETE

FASTEST FROM PLANT TO POUR

Manufacturing Division, Maxon Construction Co., Inc.
713 Talbott Building, Dayton 2, Ohio

Send the following literature:

☐ Field Report - Ft. Patrick Henry Dam ☐ How the Dumpcrete Hauls 8 Different Materials

Name_____

Firm_____

Street_____

City_____

▲ Steenberg Constr. Co., 1371 Marshall Ave., St. Paul, Minn. CA $1,655,300. water treatment plant exten. first stage, incl. 60-in. intake line, mixing basin, new sedimentation basin, new baffles and gates inflocculation basin, etc., ST. PAUL, MINN. City, L. E. Kinvig, city purch. agt., 253 City Hall, St. Paul, Minn. CD 9/23, under LB.

Henry L. Perkinson Paving & Conduit Co., 132 E. Douglas St., St. Louis 7, Mo. LB $110,458. est. $127,000. wid'n. imprv. with conc. base and b. conc. Chouteau Ave., Jefferson ave. to Grand Blvd., ST. LOUIS, MO. City, Frank J. McDevitt, pres., Bd. P. Service, 304 City Hall, 12 Blvd. and Market Sts., St. Louis, Mo. Bids Oct. 4. CD 9/6.

Tri-State Electric Co., Breckenridge, Minn., LB $147,717, 278 mi. telephone lines, Barnes, Ransom and LaMoure Counties. NORTH DAKOTA. Dickey Rural Telephone Mutual Air Corp., Ellendale, N. D. Bids Sept. 28. CD 9/8.

† U. S. Eng., 1709 Jackson St., Omaha, Neb., cancelled bids to have been opened Nov. 3, spillway earthwork, approx. 7,650,000 cu. yds. excavation and wasting, Stage I, Oahe Reservoir Proj. near Pierre, CIVENG 25-066-56-41. Total appropriation $25,000,000. SOUTH DAKOTA. CD 9/30.

Mork Hardware & Electric Co., Clarkfield, Minn., LB $372,553, 493.31 mi. rural distr. lines, Day and Brown Counties. SOUTH DAKOTA. James Valley Cooperative Telephone Co., Groton, S. D. Bids Sept. 27. CD 9/15.

Abel Constr. Co., 1815 "Y" St., Lincoln, Neb., LB $81,489, paving Vine St., Cotner Ave. to Eastboro Ave., LINCOLN, NEB. City, City Hall, Lincoln, Neb. Carl Fisher, city engr. Bids Oct. 4. CD 11/8/54.

Dodlinger & Sons Constr. Co., 1206 E. Lincoln St., Wichita, Kan. CA $449,588. reservoirs and pump houses, WICHITA, KAN. Boeing Airplane Co., Plant No. II, Personnel Bldg., Wichita, Kan. Bids Sept. 29. CD 9/14.

▲ OKLAHOMA—State Hy. Dpt., Capitol, Oklahoma City, Zone 5,

Okla.—Austin Bridge Co., 1815 Clarence St., Dallas, Tex., LB $367,639. est. $467,095. (5 bidders) four highway grade separations, U. S. 77 bypass north of 23 St., Oklahoma Co.;

Okla.—Frost Constr. Co., Hydro, Okla., LB $383,387. est. $416,169. (10 bidders) bridge and pile diversion at Cimarron River, Hy. 281 at Waynoka, Woods Co.;

Okla.—Gragg Constr. Co., Henryetta, Okla., LB $276,657. est. $297,179. (8 bidders) bridge at Muddy Boggy Creek, Hy. 43 at Coalgate, Coal Co.;

Okla.—Guy H. James Co., 4910 Sewell Ave., Oklahoma City, Okla., LB $451,798. est. $458,925 (4 bidders) concrete and steel bridge over the Verdigris River, Hy. 66, Rogers Co.;

Okla.—received no bids Oct. 4, widen bridge, U.S. 66 in El Reno, Canadian Co. est. $5,428. Bids Oct. 4. CD 9/22.

OKLAHOMA—State Hy. Dpt., Capitol, Oklahoma City, Zone 5,

Okla.—Blackburn Constr. Co., 1916 N. Broadway, Oklahoma City, Okla. LB $143,489. est. $140,534 (5 bidders) grade, drainage 1.398 mi. Hy. 51 at Hennessey and east to Skelton Creek, Kingfisher Co.;

Okla.—Hunter Constr. Co., Ada, Okla., LB $96,219. est. $96,800, (7 bidders) b. conc. widen 2.858 mi. Hy. 51, east of Stillwater, Payne Co.;

Okla.—Metropolitan Paving Co., 300 S. Indiana St., Oklahoma City, Okla. LB $79,906. est $80,358, (4 bidders) b. conc. widen., 1.7 mi. U. S. 62 and 277, Oklahoma Co. Bids Oct. 4. CD 9/22.

TEXAS—State Hy. Comn., Austin, cancelled bids to have been opened Oct. 19, 4.119 mi. Hy. U. S. 67, Control No. E-10-12-15, Bowie Co. CD 9/29.

Longhorn Investment Co., 9620 John West Rd., Dallas, Tex. Own Forces. $80,000, natural gas lines; $75,000 area lighting, ABILENE, TEX. CD 9/2.

Longhorn Investment Co., 9620 John West Rd., Dallas, Tex. Own Forces. $87,500, constr., hard paving new streets, concrete curb and gutter, ABILENE, TEX.

Longhorn Investment Co., 9620 John West Rd., Dallas, Tex. Own Forces. $65,000, site earthwork, grading, ABILENE, TEX.

Longhorn Investment Co., 9620 John West Rd., Dallas, Tex. Own Forces. $77,000, storm sewers; $80,000, sanitary sewers, ABILENE, TEX. CD 9/2.

Longhorn Investment Co., 9620 John West Rd., Dallas, Tex. Own Forces. $60,000, water lines, facilities, ABILENE, TEX.

Centex Constr. Co., 4606 Greenville St., Dallas, Tex. Own Forces. $80,000, natural gas mains, DALLAS, TEX.

Centex Constr. Co., 4606 Greenville St., Dallas, Tex. Own Forces. $97,000, asph. paved new streets, concrete curb and gutter, DALLAS, TEX. CD 7/28.

Centex Constr. Co., 4606 Greenville St., Dallas, Tex. Own Forces. $65,000, bldg. site area earthwork, grading, DALLAS, TEX.

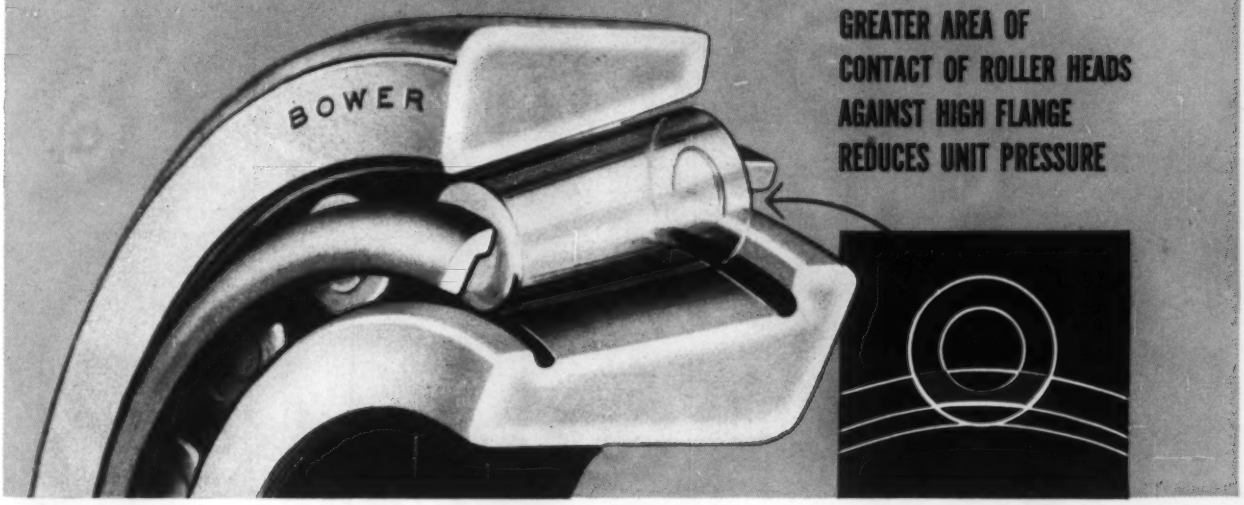
Centex Constr. Co., 4606 Greenville St., Dallas, Tex. Own Forces. $81,500, storm sewers; $88,100, sanitary sewers, DALLAS, TEX. CD 7/28.

Centex Constr. Co., 4606 Greenville St., Dallas, Tex. Own Forces. $57,500, water lines, facilities, DALLAS, TEX.

Brodie Constr. Co., 764 N. Grand St., Amarillo, Tex. CA $90,120, water supply imprvs., DUMAS, TEX. City, Dumas, Tex. B. R. McMorries, 527 Amarillo Bldg., Amarillo, engr. Bids Sept. 22. Bids Aug. 1 rejected. CD 8/12, under LB.

(Continued on pg. 125)

Bower spher-o-honed design increases bearing life



Bower engineers have incorporated many basic refinements into the design of Bower tapered roller bearings which cut maintenance to a bare minimum—increase efficiency. One of the most important of these is the *exclusive* feature illustrated above. Note that the flange at the large end of the cone is *higher*—providing a greater contact area for the roller heads. This greatly reduces wear, improves roller alignment and minimizes resultant "end play". Also note the larger oil groove, providing positive lubrication to the roller heads.

Other important Bower features which increase bearing life and dependability are generated spherical rollheads, and smooth, precision-honed races. And Bower bearings are known throughout industry for materials and workmanship of highest quality.

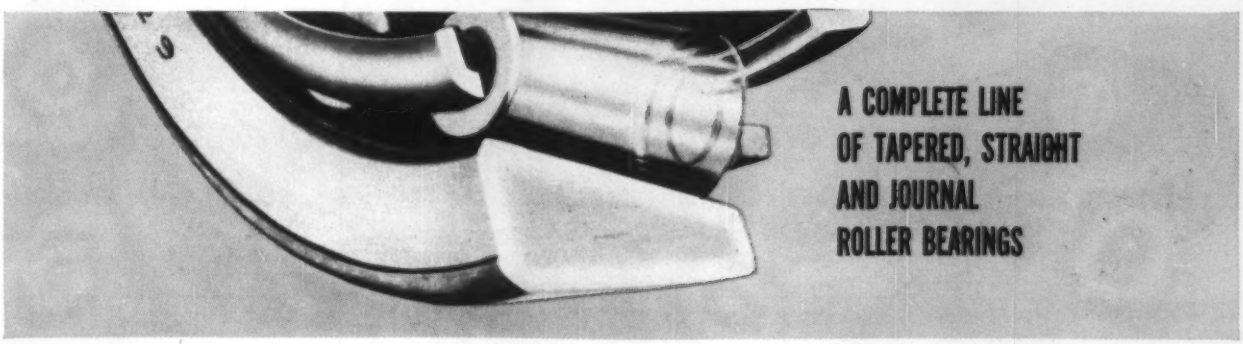
Whether your product is in full production or still in the planning stage, you'll be wise to call in a Bower engineer now. He'll show you a wide range of sizes and types to fit any application.

BOWER ROLLER BEARING DIVISION
FEDERAL-MOGUL-BOWER BEARINGS, INC., DETROIT 14, MICH.

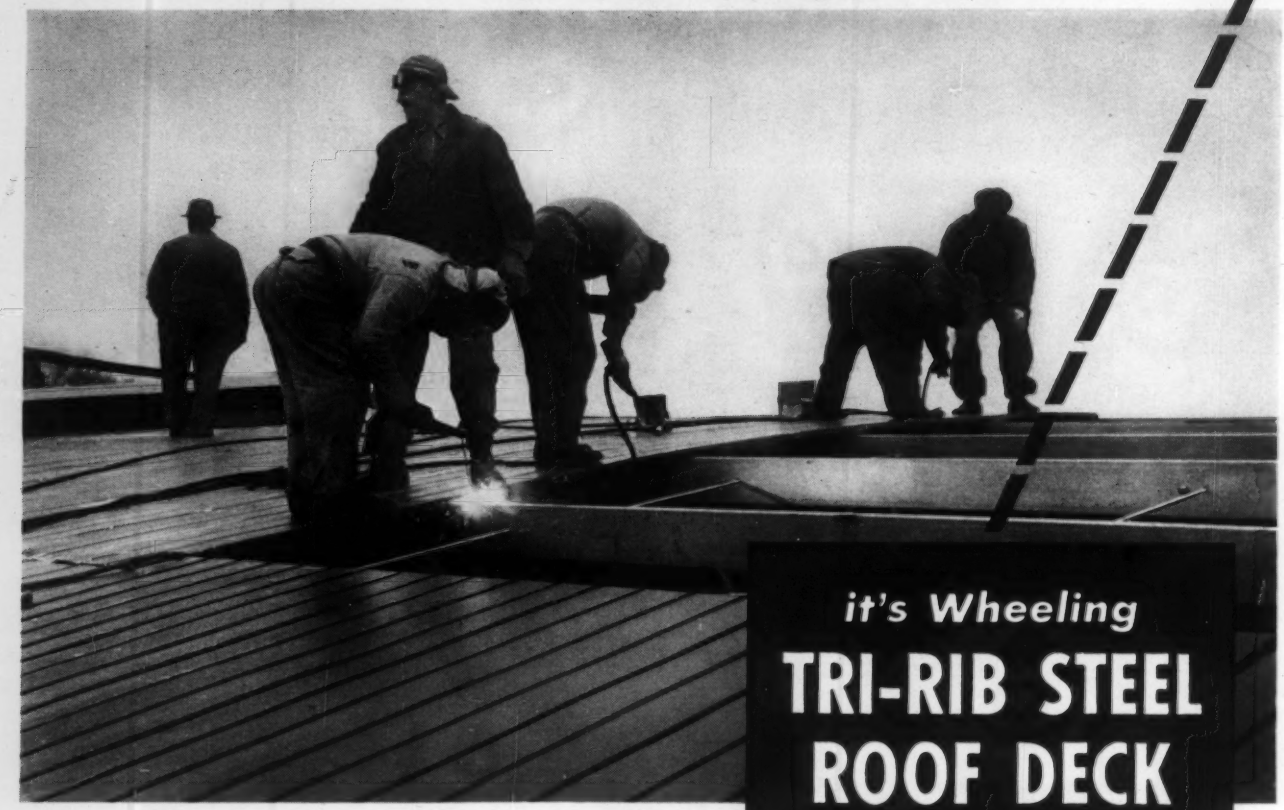
BOWER

ROLLER BEARINGS

SPHER-O-HONED



High strength / weight ratio of roof deck cuts gross weight 40%



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—and its COP-R-LOY® base means longer life!

Wheeling Tri-Rib Steel Roof Deck reduces dead load up to 22 lbs. per sq. ft. As a result you can use fewer columns, shallower footings, no subpurlins . . . often cut supporting steel requirements by as much as 20%. Write for full details or see our catalog in Sweet's.

Highway Construction—use Wheeling Galvanized Corrugated Culverts. Copper steel or pure iron. Manufactured to comply with Federal and all state highway specifications. Write for details.

DESCRIPTION

METAL THICKNESS: *18, 20, or 22-Gauge Cop-R-Loy Steel sheets.*
FINISH: *Zinc chromate iron oxide primer coat baked on after fabrication.*
LENGTHS: *up to and including 22 feet, 6 inches.*
WIDTH: *18 inches.*
PANEL WEIGHT: *50 to 67 lbs., depending upon size of panel.*
RIB DEPTHS: *1½", 1¾", 2", 2½", spaced 6" on centers.*
DEAD WEIGHT: *8 to 10 lbs. per sq. ft. when insulated and with built-up roofing.*

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Designed in accordance with specifications adopted by A. I. S. I. for light gauge structures, dated January, 1949.

(Continued from page 122)

Farnsworth & Chambers Co., Inc., Box 74, Houston, Tex. CA Approx. $175,000. extending and asph. paving Bellaire Blvd. through "Sharpstown", HOUSTON, TEX. Frank W. Sharp, 6302 Bellaire Blvd., Houston, Tex. CD 5/11/53.

† **Malone Constr. Co.,** 2428 Holly Rd., Corpus Christi, Tex., LB $246,489. est. $225,000. 121x203 ft. supply warehouse, NOY 86322. Naval Auxiliary Station, KINGSVILLE, TEX. Bureau Yards & Docks, Dpt. Navy, Admin. Bldg. 1, Naval Air Station, Austin, Tex. Bids Oct. 6. CD 9/21.

† **Joe Rivero & Son,** 2729 Perez St., San Antonio, Tex. LB $108,989, amphitheater, Proj. LA-71-55. LACKLAND AIR FORCE BASE, TEX. U. S. Govt., Bldg. 1000, Lackland Air Force Base, San Antonio, Tex. Bids Oct. 3. CD 3/17/53.

H. B. Zachry Properties, Inc., Box 2570, San Antonio, Tex. Own Forces. $45,000, c.i. water lines, facilities, SAN ANTONIO, TEX.

H. B. Zachry Properties, Inc., Box 2570, San Antonio, Tex. Own Forces. $48,500, site grading, earthwork, SAN ANTONIO, TEX.

H. B. Zachry Properties, Inc., Box 2570, San Antonio, Tex. Own Forces. $75,000, natural gas lines, SAN ANTONIO, TEX.

H. B. Zachry Properties, Inc., Box 2570, San Antonio, Tex. Own Forces. $80,000, asph. paved streets, concrete curb and gutter, SAN ANTONIO, TEX.

H. B. Zachry Properties, Inc., Box 2570, San Antonio, Tex. Own Forces. $77,500, sanitary sewers; $75,000, storm sewers, SAN ANTONIO, TEX. CD 8/31.

† **Anderson Constr. Co. and Hiebert Contg. Co.,** River Rd. and 10 Ave. S., Great Falls, Mont. CA $85,463, est. $80,975 (4 bidders) base communications bldg. at Air Force Station, Inv. 56-7, BROWNING, MONT. U. S. Eng., 4735 E. Marginal Way, Seattle 4, Wash. Bids Aug. 5. CD 7/25.

† **C. H. Leavell & Co.,** 1900 Wyoming St., El Paso, Tex. CA $368,547, laboratory and technical bldgs., Eng. 29-005-56-17, ALAMOGORDO, N. M. U. S. Eng., Box 1538, Albuquerque, N. M. CD 9/21, under LB.

BUILDINGS—LB & CA

Oliver M. Greenley Co., Independence, Iowa, CA Est. $125,000. PLANT, INDEPENDENCE, IOWA. Independence Buildings Corp., (Div. of Minneapolis-Honeywell Regulator Co., 2753 4th Ave., Minneapolis, Minn.) Independence, Iowa.

Peter Kiewit Sons Co., 1024 Omaha Natl. Bank Bldg., Omaha, Neb., CA $125,000, packing PLANT addn. (ice plant), OMAHA, NEB. Cudahy Packing Co., 33 and N Sts., Omaha, Neb.

A. J. Brennan Constr. Co., 3860 Merrell Rd., Dallas, Tex. Own Forces. $435,000, 21 DWELLINGS, DALLAS, TEX. CD 9/2.

Centex Constr. Co., 4606 Greenville St., Dallas, Tex. CA $348,500, 30 DWELLINGS; CA $368,150, 35 DWELLINGS, DALLAS, TEX. Garden Development Co., 4606 Greenville St., Dallas, Tex. CD 9/2.

Warner Constr. Co., Box 769, San Angelo, Tex., LB $856,754, est. $375,000. junior HIGH SCHOOL, MIDLAND, TEX. Midland Independent School Dist., Midland, Tex. Pierce, Norris, McCutchan, Pace & Assocs., 803 W. Texas St., Midland, archts. Bids Sept. 30.

▲ **Robert H. Smith & Co.,** 1915 Kolfahl St., Houston, Tex., LB $1,235,201. est. $1,250,000. tuberculosis HOSPITAL, TYLER, TEX. Bd. for Texas State Hospital & Special Schools, 45 and Lamar Sts., Austin, Tex. Bids Oct. 6. CD 9/27.

FAR WEST

HEAVY CONSTRUCTION—BA

Wash., Bellevue—BA 11/2—Water Dist. No. 68, Bellevue, 2 m.g. steel standpipe with pumps, control station, foundations, etc. and 12,000 ft. 12-in. asbestos cement water mains, $100,000. Plans deposit $25. H. T. Harstad & Assocs., 1000 Lenora St., Seattle, engrs.

HEAVY CONSTRUCTION—LB & CA

ARIZONA—State Hy. Dpt., 17 Ave. and Jackson St., Phoenix,

Wallace & Wallace, 1700 19th Ave., Phoenix, Ariz. LB $297,308, grading, drainage, bit. surf. 12.3 mi. Phoenix-Payson Hy. Gila Co.

WASHINGTON—State Hy. Comn., Olympia

Rumsey & Co., 3821 Airport Way, Seattle, Wash., CA, $727,654, (10 bidders) 1,000 ft. 2-level rein.-con. girder bridge on Primary State Hy. 1, extending Alaskan Way viaduct, southward from Railroad Ave., Seattle, King Co. Bids Oct. 4, awarded Oct. 5. CD 9/7.

WASHINGTON—State Hy. Comn., Olympia

Murphy Brothers, E. 2728 Broadway, Spokane, Wash., LB, $487,260, (13 bidders), draining, grading, bit. surf. 5.13 mi. Secondary State Hy. 10-A, Coulee Dam to Belvedere, Okanagan Co. Bids Oct. 4. CD 9/19.

Hall-Atwater Co. Inc., 605 13 Ave., Seattle, Wash., LB $172,000 (5 bidders) reconstr. convery galleries at Pier 25, Hanford St. Terminal, SEATTLE, WASH. Port of Seattle, Bell St. Terminal, Seattle 1, Wash. Bids Oct. 3. CD 9/15.

† **P & B Constr. Co.,** N. 2004 Bessie St., Spokane, Wash., CA, $80,597. airmen's club alterations, Fairchild Air Force Base, SPOKANE, WASH. Purch & Contg. Officer Fairchild Air Force Base, Spokane, Wash. CD 10/31/51.

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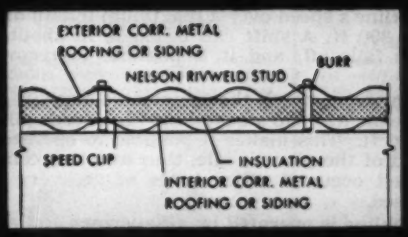
S-s-s-t! . . . a familiar sound repeated a thousand times* a day (per stud welder) in the erection of curtain walls . . . a whisper which has made a resounding impact on forward-thinking architects and builders. It's the sound of the NELWELD® gun end-welding a Rivweld stud in an effortless instant!

Insulation and corrugated metal sheets impaled over the studs, then riveted, complete this modern, efficient "sandwich" type wall.



Sparks the imagination, doesn't it? . . . suggests infinite possibilities for sturdy, low-cost, *field-assembled* construction . . . lets you know that hundreds of applications are already pre-engineered for you. Consult your local Nelson Field Engineer. He's an idea man trained to reduce costs and improve fastening. Write for details.

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NELSON STUD WELDING DIV OF GREGORY INDUSTRIES, INC **LORAIN, OHIO**

1-cu. yd. Sauerman Slackline Cableway began operations in 1921.

Company expanded output with this 2-cu. yd. Sauerman Slackline Cableway in 1948.

Minnesota Gravel Producer Gives the Facts on Recovery with Slackline Cableway

Guaranteed Gravel and Sand Co.'s 2-cu. yd. Sauerman Slackline Cableway, installed in 1948, replaced a similar unit of 1-cu. yd. capacity. Combined service of these two machines adds up to over 33 years company experience in the mechanics and economics of underwater recovery with Sauerman Slackline equipment.

Management of the Minnesota operation believes that a slackline has many definite advantages where the inhaul is long and the material is below water. Faster than other types of equipment, the company capitalizes on the slackline's speed over a maximum inhaul of 700 ft., with an average of 250 to 300 ft. A shift can be made in about an hour, if the material suddenly falls off, and it is possible to recover from depths exceeding 100 ft.

Due to the height from which the material is discharged, the slackline cableway readily lends itself to stockpiling. The surge pile can be built to a height of over 60 ft. This makes it possible to operate during periods when the river end of the plant is idle, thus averting complete shutdown such as might well occur if other types of recovery and stockpiling equipment were used.

The present slackline is operated by a Sauerman Roller Bearing Hoist, driven by a 6-cylinder diesel. The 80-ft. mast is so located that the effective height above water level is approx. 95 ft.

Complete details on the above operation were recently published in a leading aggregates producer publication. For full information contact Sauerman Bros., Inc., and request Catalog C., Slackline Cableways.

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▲ **CALIFORNIA**—State Div. Hys., P. Wks. Bldgs., Sacramento,
Stolte, Inc.-Gallagher & Burke, 8451 San Leandro St., Oakland, 21, Calif., CA, $2,638,616, structures, grading, paving 2.8 mi. Sign Route 24, between Oakland Blvd. and 0.3 mi. north of Monument just north of Walnut Creek, Contra Costa Co. Bids Sept. 28, awarded Oct. 4. CD 9/26, under LB.

▲† **Guy F. Atkinson Co.**, Box 259, Long Beach, Calif. CA $1,232,077, Los Angeles River Imprv., River Mile 4.97 to 4.63, Long Beach, Los Angeles Co., ENG-04-353-56-8, CALIFORNIA. U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif., Bids Sept. 20. CD 9/22 under LB.

▲ **CALIFORNIA**—State Div. Hys., 120 S. Spring St., Los Angeles,
Vinnell Co. Inc. and Vinnell Constructors, 1145 Westminster Ave., Alhambra, Calif., CA $4,040,782, grading, surf. 2.4 mi., six bridges and three pedestrian undercrossings on Golden State Freeway, Los Angeles, Glendale and Burbank, Los Angeles Co. Bids Sept. 29, awarded Oct. 4. CD 10/4 under LB.

Anjoe Constr. Co., 604 N. Montebello Blvd., Montebello, Calif., LB $269,462, sanitary sewer in Alhambra Ave., Relief Sewer Dist. 9, Unit A, LOS ANGELES, CALIF. City, City Hall, Los Angeles, Calif. Bids Oct. 5. CD 9/21.

F. S. Rolandi, Jr. & Son, 599 Front St., San Francisco, Calif., LB $327,960, Schedule I, sanitary sewer sys. MILL VALLEY, CALIF. Tamalpais Valley Sanitary Dist., 616 Glenwood Ave., Mill Valley, Calif. CD 2/28.

▲ **M. H. Golden Constr. Co.**, 3485 Noell St., San Diego, Calif., LB $3,024,000, cyclopean concrete quay wall, 10 Ave. Marine Terminal, SAN DIEGO, CALIF. City, Civic Center, San Diego, Calif. Bids Oct. 5. CD 8/24.

BUILDINGS—LB & CA

▲† **Henry J. Kaiser Co.** (Engineering Div.) 1924 Broadway, Oakland, Calif., CA Total Est. $15,000,000 Design and Construct, engineering TEST REACTOR at National Testing Station, ARCO, IDAHO. Atomic Energy Comn., Idaho Operations Office, Idaho Falls, Idaho. CD 6/8.

† **E. Goettling & Son**, 2911 S. Tenler St., Tacoma, Wash., LB, $290,600, LAUNDRY ADDN., Bldg. 19, Veterans Administration Hospital, AMERICAN LAKE, WASH. Veterans Admin., Munitions Bldg., Wash, D. C. Bids Oct. 4. CD 8/26.

▲ **Hercules Construction Co.**, 524 Heathcliff Dr., Sharp Park, Calif., Owner Builds, $2,250,000. 150 HOME subdivision, FAIRFIELD, CALIF.

▲ **Stanley M. Davis Organization**, 640 Bancroft Ave., San Leandro, Calif. Owner Builds. $3,332,000, 238 HOMES, LIVERMORE, CALIF.

▲ **Preston Constr. & Realty Co.**, 2010 4 St., San Rafael, Calif. Owner Builds, $2,983,000. 157 HOME Subdivision, Melody Manor, South Novato Blvd. NOVATO, CALIF.

▲ **Hercules Construction Co.**, 524 Heathcliff Dr., Sharp Park, Calif., Owner Builds, $3,200,000. 200 HOME Subdivision in Pacific Manor Tract, SHARP PARK, CALIF.

CANADA

HEAVY CONSTRUCTION—BA

Ont., Sarnia—BA 11/7—City, City Hall, 1,470 lin. ft. 60-in. concrete pipe and 2,650 lin. ft. of 54-in. concrete sewer pipe for storm sewers, $100,000. CD 3/6/53.

Ontario—BA 11/8—Hydro-Elecrtic Power Comn. of Ontario, 620 University Ave., Toronto, design, supply, manufacture, fabrication, shop testing, delivery, guarantee and supervision of erection of drum gates, control equipment, service gate frame and embedded parts for Canadian and U. S. powerhouse ice sluices near Cornwall, part of St. Lawrence Seaway and power project. Plans deposit $25. Wm. Hogg, c/o owner, Mills Roches, Ont., field engr.; adv. ENR 10/20.

BUILDINGS—SLC

Que., Montreal—TANK—Canadian Pittsburgh Industries Ltd., 300 Blvd. St. Croix, Montreal, soon lets contract 1 story, steel structure, Tank Bldg. No. 2 of glass processing extension. Over $100,000. Barott, Marshall, Montgomery & Merrett, 1425 Mountain St., Montreal, archts. Lindley Shector, c/o archts., engr.

HEAVY CONSTRUCTION—LB & CA

Mannix-O'Sullivan Paving Co. Ltd., 604 Northern Hardware Bldg., Edmonton, Alta., CA, $114,620, road paving at R.C.A.F. Station, EDMONTON, ALTA. Defence Constr. (1951) Ltd., 56 Lyon St., Ottawa, Ont. Awarded Sept. 30.

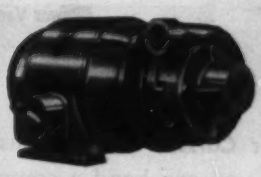
▲ **Emil Anderson Co. Ltd.**, Hope, B. C., and **Northwood Constr. Co. Ltd.**, 1768 East Hastings St., Vancouver, B. C., LB, $2,593,621 (5 bidders) removal of Ripple Rock, Seymour Narrows, near Vancouver, BRITISH COLUMBIA. Dpt. P. Wks., Hunter Bldg., Ottawa, Ont. Bids Sept. 28. CD 8/12.

▲ **C. A. Pitts General Contractors Ltd.**, 30 Commercial Rd., Toronto, Ont., CA, $3,043,690 (4 bidders) Cornwall dyke closure and diversion of Cornwall Canal, part of St. Lawrence Seaway and Power Proj., Ontario Hydro-Electric Power Comn. of Ontario, 620 University Ave., Toronto, Ont. Bids Sept. 27, awarded Oct. 6. CD 9/14.

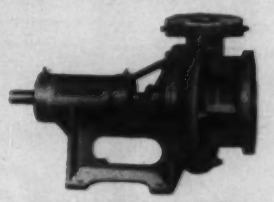
(Continued on page 130)

How to Save

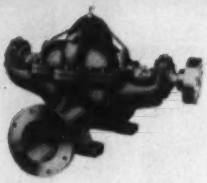
TIME \ MONEY \ ENERGY \



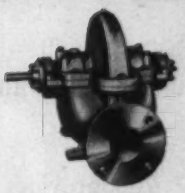
TYPE PE FLUIDYNE INTEGRAL HP PUMPS
A complete line of electric close-coupled general purpose pumps. Threaded or flanged connections. Capacities: to 800 gpm; heads: up to 260 feet; motors: up to 50 h.p.



TYPE PB FLUIDYNE GENERAL PURPOSE PUMPS
Flexible coupled, single-stage, end suction, general purpose pumps. Rugged and durable. Capacities: up to 5500 gpm; heads: up to 260 feet; motor: up to 150 h.p.



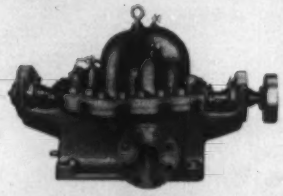
TYPE A GENERAL PURPOSE PUMPS
For application to the widest variety of pumping conditions. Single stage split case design. Capacities: up to 70,000 gpm; heads: to 300 feet. All types of drive.



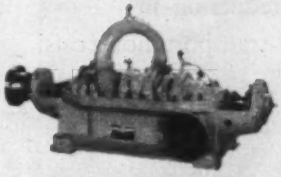
TYPE AS GENERAL PURPOSE PUMP
The centrifugal pump with mechanical shaft seals that eliminate the packing box. Up to 4" in discharge sizes. Capacities: up to 750 gpm; heads up to 210 feet.

BY BUYING FROM THE COMPLETE LINE

VERTICAL DEEP WELL TURBINE PUMPS
For application to deep well pumping. Lifts from 1000 feet or more. Capacities: up to 30,000 gpm. H.P. range: up to 1000 h.p. oil and water lubricated types. Widest range of sizes.



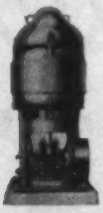
TYPE TU BOILER FEED AND PROCESS PUMP
2-stage high pressure pump for water and other liquids. Capacity: 50 to 3500 gpm; heads: up to 600 feet. Internal cross over is built into top half of pump case.



TYPE TUT MULTI-STAGE PUMPS
3, 4 and 5-stage pumps for water handling and process services. 1" to 5" discharge sizes. Capacity: up to 1350 gpm; head range: up to 1600 feet. Split case design.

INDUSTRIAL SERVICE PUMPS
For application to pits, sumps, basins, reservoirs and other surface water sources. Same capacity as deep well turbine above. H.P. range: up to 2500 h.p.

HYDRO-LINE PUMPS
An enclosed, close-coupled, vertical centrifugal process pump for handling petroleum hydrocarbons, where NPSH is limited. Capacities: to 6000 gpm; heads: to 1500 feet.



HI-LIFT PUMPS
The unique positive displacement deep well pump that literally squeezes water upward. Capacity: 10 to 55 gpm; lifts: up to 1000 feet. For wells 4" in diam. and up.

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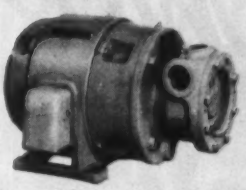

TYPE TVE & TVB TURBINE VANE PUMPS
Standard and self-priming, close-coupled and flexible-coupled pumps for hot and cold, clear and vaporous liquids. Capacities: up to 58 gpm; heads: up to 800 feet.

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☐ TYPE TU B-1400 ☐ TYPE TUT B-1400 ☐ INDUS. SERVICE B-100 ☐ HYDRO. LINE B-1700
☐ HI-LIFT B-142 ☐ TURBINE VANE B-2305 ☐ SELF-PRIMING B-2000

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Other capacities: 600, 365, 210, 125 c.f.m.

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on tough jobs

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...The time-tested quality coal tar coating in tape form...now made with Xtra thickness of coal tar for Xtra savings

TAPECOAT-X is designed for today's needs in protecting pipe, pipe joints, fittings, mechanical couplings, tanks, and other surfaces vulnerable to corrosion . . . above or below ground. Available in rolls of 2", 3", 4", and 6" widths.

1

SAVES TIME and TROUBLE

TAPECOAT-X is easier to apply, saves time on the job. An exclusive new insert speeds unrolling and application. This liner disappears during the application process—never gets in your way.

2

SAVES LABOR

The extra thickness of coal tar in TAPECOAT-X permits a single-wrap application to make it go farther, faster and reduce labor costs.

3

SAVES MATERIAL

Because it can be single-wrapped and give the same effective protection as the usual double-wrap method, TAPECOAT-X covers more surface per foot of tape.

4

SAVES MONEY

With reduced labor cost, greater coverage and faster application. TAPECOAT-X saves you money right down the line.

Write for literature presenting the complete performance story on TAPECOAT-X.

The TAPECOAT Company

ORIGINATORS OF COAL TAR COATING IN TAPE FORM

1551 Lyons St., Evanston, Illinois

(Continued from page 126)

ONTARIO—Dpt. of Hys., Parliament Bldgs., Toronto, **Thompson Constr. (Chemong) Ltd.**, 9 Richmond St., Toronto, Ont., CA, $289,976 (3 bidders) Contract 55-176, grading, culverts, gran. base along 5 mi. Hy. No. 17 (Trans-Canada Hy.) from 5 mi. west of Red Rock Corners westerly. Awarded Sept. 30. CD 4/27/44.

Curran & Briggs Ltd., 61 Haverson Blvd., Toronto, Ont., LB, $75,075, asph. paving in various areas of North York suburb, TORONTO, ONT. North York Twp., 5145 Yonge St., Toronto, Ont. G. H. Baker, c/o owner, twp. engr.

Swansea Construction Co. Ltd., 363 Rogers Rd., Toronto, Ont., CA, $218,456, 18- to 36-in. sanitary trunk sewers, TRAFALGAR, ONT. Trafalgar Twp. Municipal Offices, Trafalgar, Ont. Gore & Storrie Ltd., 1130 Bay St., Toronto, engrs. Awarded Sept. 30;
S. McNally & Sons Ltd., 220 King St., E. Hamilton, Ont., CA, $185,152. 18- to 36-in. sanitary trunk sewers (Trafalgar, Ont.).

QUEBEC — Provincial Public Works Dpt., Parliament Bldgs., Quebec City, Que.,
Komo Contr. Ltd., 1500 St. Vallier St., Quebec City, Que., CA, $225,000. viaduct over a river and two streets, St. Georges De Beauce. Awarded Oct. 3.

Marine Industries Ltd., Sorel, Que., CA, $140,000. water works expansion, BERTHIER, QUE. Melchers Distilleries Ltd., Berthier, Que. Awarded Oct. 3.

Ovila Gauthier Ltd., 550 Price St. W., Chicoutimi, Que., CA, $300,000 sewers and water mains, ILE MALIGNE, QUE. Municipality, Town Hall, Ile Maligne, Que. Awarded Oct. 3. CD 10/3.

BUILDINGS—LB & CA

Brookfield Constr. Co. Ltd., 135 Ingles St., Halifax, N. S., CA Est. $425,000. 30 HOUSING units, services at the P. M. Q. area Army Camp, Camp Gagetown, FREDERICTON, N. B. Central Mortgage & Housing Corp., 1032 Gotingen St., Halifax, N. S. Bids Aug. 16. CD 8/10.

▲ **E. G. M. Cape & Co.**, 620 Cathcart St., Montreal, Que., CA, $1,000,000. (7 bidders) concrete work for foundation and superstructure of PLANT STORAGE bldg., kiln, mill, substation and maintenance shop at new cement plant, CLARKSON, ONT. St. Lawrence Cement Co., 80 King St. W., Toronto, Ont. Awarded Sept. 29. CD 8/10;
Matthew L. Carroll (Ontario) Ltd., 55 York St., Toronto, Ont., CA, $350,000. (8 bidders) 2 story, bsmnt., 50x110 ft., office bldg. (Clarkson, Ont.).

▲ **Argo Constr. Ltd.**, 18 Gladstone Ave., Ottawa, Ont., CA, $1,050,000. 6 138-suites, APARTMENT BLOCKS, Brittany Drive, OTTAWA, ONT. Brittany Terrace, 69 Sparks St., Ottawa, Ont. Belcourt & Blair, 233 Metcalfe St., archts.

Provincial Home Development Corp., 1063 Beaver Hall Hill, Montreal, Que., Owner Builds, over $500,000. 50-room, 3 to 4 story, HOTEL plus 30-unit motel and dance hall, ROCK FOREST, ONT.

▲ **Fluor Corp. of Canada, Ltd.**, 200 Bloor St. E., Tortonto, Ont., CA, $4,500,000 (4 bidders) wax PLANT, SARNIA, ONT. Imperial Oil Ltd., 445 S. Christian St., Sarnia, Ont. Bids Sept. 12, awarded Sept. 30. CD 9/9.

▲ **Burcon Builders Ltd.**, 1 Cambourne Ave., Toronto, Ont., CA, $600,000, 3 story, bsmnt., 180x135 ft., 57-suite APARTMENT, Morningside Ave., CA $680,000. 10 story 61x127 ft., 100-suite, rein.-con. frame apartment bldg., and underground parking, 118 Tyndall Ave., TORONTO, ONT. Irwin Burns, 1 Cambourne Ave., Toronto, Ont. CD 6/28.

Katherine Apartments Ltd., c/o 82 Botfield Ave., Toronto, Ont., Owner Builds, $500,000, 11 story, bsmnt., 34x110 ft., rein.-con. frame, brick block APARTMENT 606 Avenue Rd., TORONTO, ONT. T. W. Bedall, 215 Erskine Ave., Toronto, archt.

Ramsay Contg. Co., Ltd., 170 Perth Ave., Toronto, Ont., CA $210,000. 28,000 sq. ft. FACTORY EXTEN., TORONTO, ONT. Neptune Meters Ltd., Lake Shore Rd., Long Branch, Ont. Awarded Oct. 3. A. G. Facey, 991 Bay St., archt. Edgar A. Cross, 991 Bay St., engr. Awarded Oct. 3.

▲ **Anglin-Norcross Ontario Ltd.**, 224 Davenport Rd., Toronto, Ont., CA, $5,250,000. (7 bidders) 8 story and 2 story penthouse, bsmnt., sub-bsmnt., 100x200 ft., rein.-con., structural steel, rein.-con. frame, stone walls, brick, BANK and OFFICE, TORONTO, ONT. Bank of Canada, 10 Toronto St., Toronto, Ont. Bids Sept. 7, awarded Oct. 5. CD 8/17.

Mutual Leaseholds, c/o S. Sharf, 90 Ava Rd., Toronto, Ont., Owner Builds, $225,000, 1 story 170x184 ft., brick, block FACTORY, Eglinton Ave. E. near Victoria Park Ave., TORONTO, ONT. Harry B. Kohl, 29 Colborne St., Toronto, archt.

P. W. Graham & Sons Ltd., Imperial Bank Bldg., Moose Jaw, Sask., CA, $484,000. HOSPITAL EXTENSION, ESTEVAN, SASK. St. Joseph's Hospital Board, Estevan, Sask. Awarded Sept. 30. CD 11/24/50.

ALASKA

HEAVY CONSTRUCTION—BA

† Alaska—WATER LINES—BA 10/28—U. S. Eng., Anchorage, water lines to supply deluge sprinkler sys. in maintenance hangars, Ladd and Elmendorf Air Force Bases, Inv. 56-21. Plans deposit $20. CD 8/22.

(Continued on page 132)

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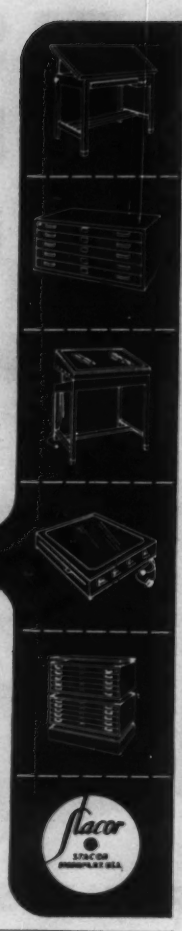

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881 East 141st Street, New York 54, N. Y.
Hammond, Ind. Houston, Tex. Jacksonville, Fla.

(Continued from page 130)

HEAVY CONSTRUCTION—LB & CA

† **Alaska Communications System,** 4735 E. Marginal Way, Seattle 4, Wash., rejected bids June 20, addnl. telephone cable facilities between Juneau and ACS transmitter station on Lena Point Rd., Inv. 55-4, LB $107,500. ALASKA. CD 6/27 under LB.

City, City Hall, Fairbanks, Alaska, rejected bids Aug. 23, coal handling facilities for municipal utilities sys., LB $206,075. FAIRBANKS, ALASKA. CD 9/1 under LB.

AMERICANS ABROAD

HEAVY CONSTRUCTION—LB & CA

† **E. C. Ernst, Inc.,** 1624 14th St. N. W., Wash. 9, D. C. CA $366,500, outside telephone plant at Thule Air Force Base, Greenland and Goose Air Force Base, Labrador. RFP-36-600-56-5-24 (c). GREENLAND and LABRADOR. Headquarters, Middletown Air Materiel Area, Olsted Air Force Base, Middletown, Pa.

U. S. POSSESSIONS

BUILDINGS—LB & CA

▲† **Hawaiian Dredging Co.,** Koster & Wythe, P. O. Box 127, Agana, Guam, CA $1,306,000. fifth increment, for 4-story permanent Guam Memorial HOSPITAL. Spec. PWB-22-55. GUAM. P. Wks. Office, Marine Dr., Tamuning, Guam. Bids Sept. 30. CD 8/1.

Proposed Projects

WATER SUPPLY

Colo., Sterling—City, City Hall, water storage facilities imprvs. $124,000. Harold Hoskins & Assocs., 725 9th St., Greeley, consult. engrs.

Mo., Neosho—City, water sys. imprvs., $400,000. Black & Veatch, 4706 Broadway, Kansas City, Mo., consult. engrs. CD 2/8/45.

O., Upper Arlington—City, water line from city water tower along Northwest Blvd. and Tremont Rd. to Fishinger Rd. west to Riverside Dr. south to Nottingham Rd., $122,000; 12-in. water line from north of Fishinger Rd. along Reed Rd. to McCoy Rd. west to Riverside Dr., south to connect with city's system, $157,000. Chet Niple, city engr.

▲ **O., Youngstown**—Ohio Water Service Co., 235 State St., water plant to take water from Lake Erie, mains to serve large section of western Lake Co., Mentor, $2,675,460.

Tex., Houston—Neiman-Marcus Co., Main & Ervay Sts., Dallas water, sanitary and strom sewer lines, $100,000. 23-acre site.

Tex., San Antonio—Empire Plaza, c/o Jaffe & Martin, 4623 Blanco Rd., plans by Valdez & Williams, 918 Manor Dr., proj. archts., water, sanitary-storm sewers, 11-acre tract, S. Zarzamora and Brady Blvd. $100,000.

SEWERS, WASTE DISPOSAL

Calif., Los Angeles—Los Angeles Co., Hall of Records, sanitary sewers in Lowermont St., Norwalk, (C.I. 1707) $138,900. J. A. Lambie, engr.

▲ **Fla., Ocala**—City, sewage collection sys., sewage lift stations, sewage force mains and treatment plant. $2,000,000. Bids in December. Russell & Axon, Municipal Airport, Box 1431, Daytona Beach, Fla., consult. engrs. CD 11/5/54.

▲ **Ill., Melrose Park**—Village, Village Hall, storm sewers, $1,950,000. Edwin Hancock Eng. Co., 1507 W. Jackson St., Chicago, consult., engr.

Kan., Salina—City, City Hall, $300,000 bond election Oct. 18, imprvs. extens. to sewer sys. (Correction-bond election date). CD 9/28.

Mich., Saginaw—City, City Hall, Morris Street Relief Sewer. $410,000. Carl T. Dust, city engr. CD 11/13/46.

Mo., Princeton—City, $550,000 bond election Oct. 11, sewer sys., water plant imprvs., street surfacing, electric distr. sys., $550,000. Allgeier, Martin & Assoc., 1204 Main St., Joplin, consult. engrs.

▲ **Mo., Raytown**—City, $1,825,000 bond election Oct. 25, sanitary sewage facilities, B. L. Oliver, 1805 Grand Ave., Kansas City, Mo., consult. engrs. CD 8/25.

Ore., Albany—City, City Hall, voted bonds, trunk sewers. $500,000. Stevens & Thompson, National Bldg., Portland, consult. engrs. Harold Poling, city engr.

Tex., Houston—Glenbrook Development Corp., 7445 Park Place Blvd., sanitary sewers, $77,500; storm sewers, $75,000. A. B. Moore Engrg. Co., 307 S. Main St., consult. engrs.

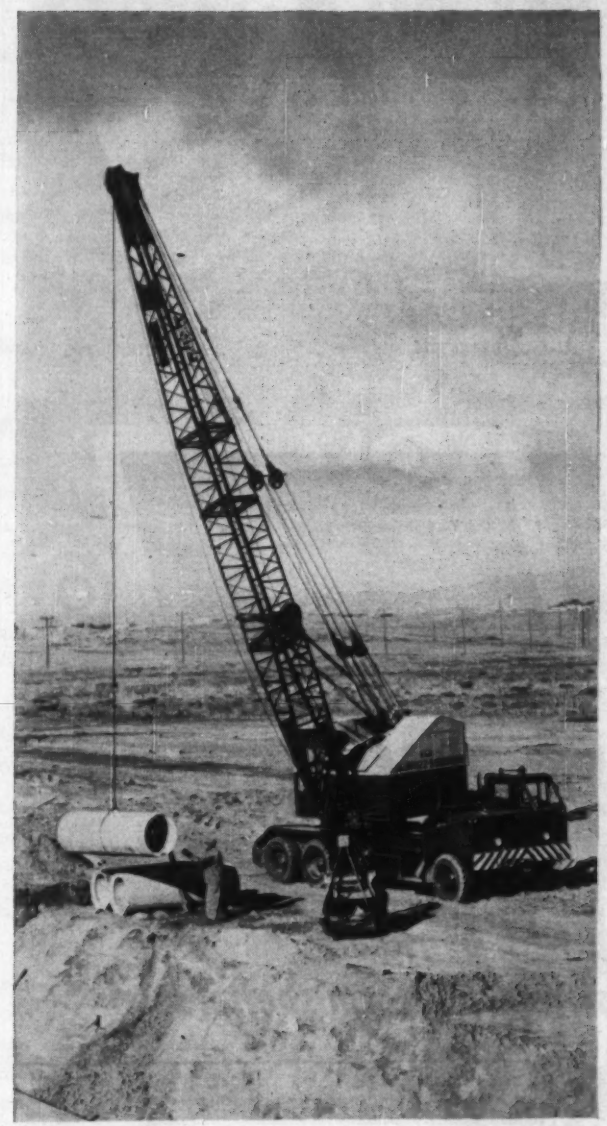
Tex., Houston—Lakeside Oaks Development Corp., 7445 Park Place Blvd., storm sewers, $75,000; sanitary sewers, $75,000 in Glenbrook Valley area. A. B. Moore Engrg. Co., 307 S. Main St., consult. engr.

Tex., Houston—Frank W. Sharp, 6302 Bellaire Blvd. storm sewers, $75,000; sanitary sewers, $77,500 in extens. of "Scenic Woods".

Tex., Houston—Frank Teague & Assocs., Union Natl. Bank Bldg., sanitary sewers, $77,500; storm sewers, $75,000 off Steubner-Airline Rd., adjacent to Lincoln City.

(Continued on page 135)

BUCYRUS-ERIE TRANSIT CRANE



Despite unstable, sandy footing, Tomei's 22-B Transit Crane handled 45- to 78-in. reinforced concrete pipe sections weighing up to 9½ tons, without difficulty. Operator Solem said he particularly liked the machine's ability to "boom down" with load, using the engine as a brake. He found this especially handy with heavy loads.

Does Double Duty for California Contractor

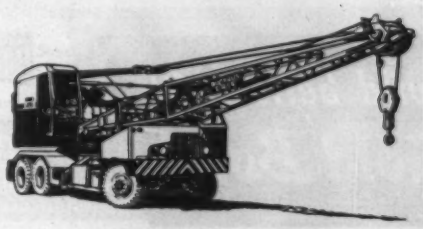
While J. Tomei and Sons Construction Co. were laying 5,000 feet of storm sewer pipe at Los Angeles International Airport, they were also working a road job at Palos Verdes 14 miles away. The Tomeis put a fast-moving 22-B Transit Crane to work servicing both projects.

From long experience, they knew that a Transit Crane's travel speed and quick, easy convertibility to shovel, dragline, clamshell, or dragshovel makes it ideal for multiple assignments.

A Transit Crane offers other outstanding features, too: friction swing brake to permit holding boom point over desired spots . . . power-controlled lowering for main hoist line . . . independent power boom hoist with power-controlled lowering . . . open-throat design for multiple-line rigging without removing sheave guards . . . 8- or 16-part pendant suspension for quick change of boom length . . . safety boom stops . . . and boom angle indicator.

These are all *standard features* on a Transit Crane — you pay nothing extra for the extra value. Investigate the profit-making Transit Crane soon. Your Bucyrus-Erie distributor has complete details on both the 25-ton 22-B and the 15-ton 15-B.

154E55



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South Milwaukee Wisconsin

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(Continued from page 130)

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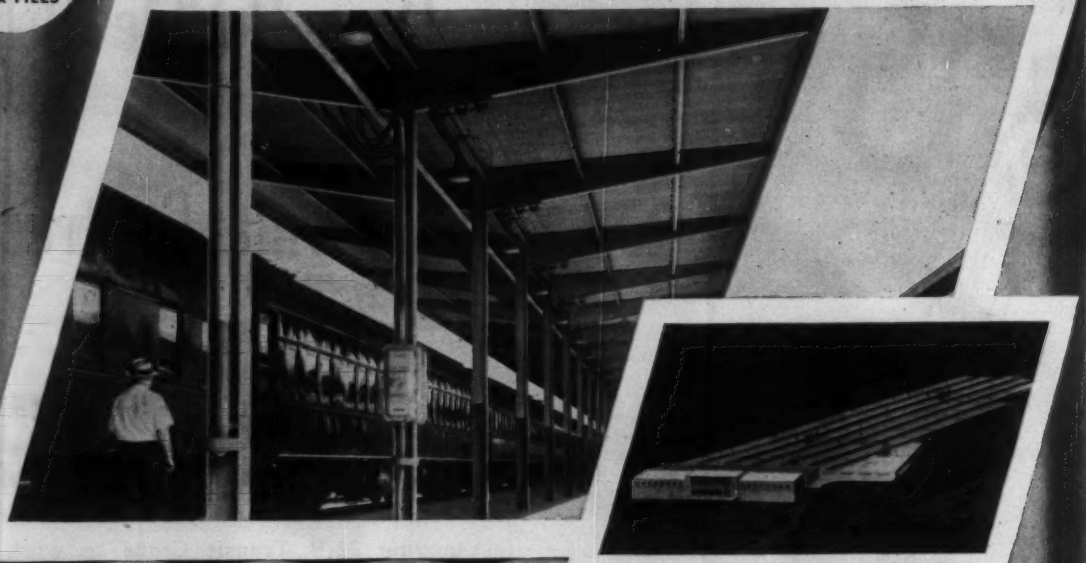

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Corrugated Asbestone teams up with gypsum on these fireproof, corrosion-resistant platform shelters

Train shed roofs in New Orlean's new Union Passenger Terminal will stand up against corrosion and weather year after year. They're made of fireproof Gold Bond Corrugated Asbestone "400" topped with poured gypsum roof deck. They're as good looking as they are practical... natural light and shadow lines are formed by the texture. And rock-like asbestos and gypsum need no upkeep.

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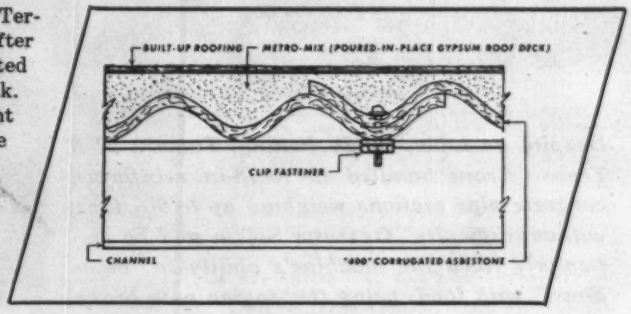

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(Continued from page 130)

Tex., Houston—Lewis O. Tyra & Assocs., 5519 Lawndale St., storm sewers, $75,000; sanitary sewers, $77,500 in area Overton Rd. and Southern Oaks Blvd.

Tex., Lubbock—Kulp & Gibson, Lubbock, storm sewers, $77,000; sanitary sewers, $80,000.

Tex., Richardson—Lovvorn-Davidson, Inc., 6617 Snider Plaza, Dallas, storm sewers, $75,000; sanitary sewers, $75,000 in Unit No. 5, Richardson Heights.

▲ Tex., Texas City—Galveston Co. Comrs., Court House, storm water pumping stations, Precinct 1, $200,000; Precinct 2, $150,000; Precinct 3, $125,000; Precinct 4, $175,000; Precinct 5, $225,000. Charles R. Haile & Assocs., 2801 C & I Life Bldg., Houston, consult. engrs.

Tex., Texas City—Freeway Park Development Corp., Inc., 5519 Lawndale St., Houston, storm sewers, $75,000; sanitary sewers, $77,500.

Ont., Bronte—Village, Municipal Bldg., sewerage sys. serving entire community, $375,000.

▲ Ont., Toronto—Municipality of Metropolitan Toronto, 67 Adelaide St. E., sewage treatment plant enlargement near mouth of Mimico Creek. $1,000,000. Franklin McArthur Assocs. Ltd., 38-A Mattson Rd., Downsview, consult. engrs. CD 1/5.

Que., Ile Maligne—Municipality, Town Hall, sewers and water mains, $400,000. J. W. Drover 10 Cothran Ave., city engr.

BRIDGES

GEORGIA and FLORIDA—State Hy. Dpt. of Georgia, Atlanta and State Road Dpt., Tallahassee, Fla. rebuilding St. Mary's Bridge between Folkston, Ga. and Jacksonville, Fla.

▲ WISCONSIN—State Hy. Comn., State Hy. Office Bldg., Madison

Adams Co.—structure, STH 21, Petenwell Bridge, $400,000.

Bayfield Co.—structure, grading, ballast, bit. plant mix or b. conc. surf. 12. mi. STH 13, Washburn-Bayfield, $205,200.

Buffalo Co.—structure, grading, ballast, base 2.39 mi. STH 25, Wabasha-Nelson (Nelson Dike), $685,000.

Chippewa Co.—structure, grading, base, c. conc. surf. 1.12 mi. USH 53, Eau Claire-Chippewa Falls (Chippewa Falls) $732,800.

structure, approaches 0.5 mi. USH 53, Bloomer-New Auburn, $100,000.

Clark Co.—structure, approaches 0.22 mi. USH 10, Fairchild-Neillsville, $80,000.

structure, grading, base, bit. plant mix or b. conc. surf. 2.5 mi. STH 73, Neillsville-Greenwood (incl. Urban in Greenwod), $175,600.

Crawford Co.—bit. plant mix or b. conc. surf. 2.17 mi. STH 9, Lansing Bridge Approaches, $31,700.

Dane Co.—structure, grading, ballast, base 2.7 mi. USH 51, Stoughton-STH 30, $731,400.

right-of-way, structure, grading, ballast, base, bit. road mix surf. 0.2 mi. STH 73, Waterloo Creek Bridge, Marshall, $81,600.

structure, grading, ballast, base, c. conc. surf. 3.53 mi. USH 12, Madison South Belt Line-Nakoma Interchange, $923,900.

I.C. RR Overpass, USH 151, Verona-Madison (Inside Madison), $68,200.

Douglas Co.—engineering, USH 53, Duluth-Superior Interstate Bridge, $10,000.

Green Co.—bit. plant mix or b. conc. surf. 1.02 mi. STH 39, Legler Bridge and Approaches, $9,200.

Iowa Co.—structure, approaches STH 191, Dodgeville-CTH "Y", $30,000.

Jefferson Co.—structure, approaches STH 26, Rock River Bridge, City of Jefferson, $300,000.

C & N W Ry Overpass, STH 26, Jefferson-Johnson Creek, $100,000.

Juneau Co.—structure SHT 21, Petenwell Bridge, $400,000.

5 bridges and culverts STH 173, Mather-Wood Co. Line, $100,000.

Langlade Co.—C & N W Ry Underpass USH 45, Matteks-Corners-North Co. Line, $75,000.

Milwaukee Co.—structure, grading, base, bit. plant mix or b. conc. surf. 1.64 mi. STH 32, North Prospect Ave., Milwaukee, $661,000.

structure USH 141, N. Pt. Washington Rd., C & N W Ry Underpass, $330,000.

structure, Crossway, E-W Expressway, N. 32 St. Grade Separation, $230,000.

structure, Crossway, E-W Expressway, N. 35 St. Grade Separation, $460,000.

right-of-way, structure, grading, ballast, base bit. road mix surf. 0.3 mi. STH 131, Mitchell Bridge, $58,500.

right-of-way, structure, grading, ballast, base, bit. road mix surf. 0.2 mi. STH 173, STH 21-Valley Junction (Valley Jct. Bridge), $32,500.

Ozaukee Co.—structure, approaches 0.1 mi. TH 167, West Co. Line-Meqnon, $15,000.

Pierce Co.—structure, approaches 0.2 mi. STH 29, Prescott-River Falls, $50,000.

engineering USH 63, Red Wing Interstate Bridge, $50,000.

Polk Co.—structure USH 8, St. Croix Falls Hill (Subway), $105,000.

Racine Co.—right-of-way, structure, grading, ballast base, c. conc. 1.15 mi. STH 32, Ives Subway and approaches, $972,000.

right-of-way, structure, grading, ballast, base, c. conc. 1 mi. STH 38, Herlicksville Bridge and Approaches, $512,000.

structure, grading, base, surf. c. conc. 0.3 mi. STH 36, Milwaukee, Burlington, $315,000.

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To me, Miami's heart is the unbelievably handsome, seven story building Maul Industries, Inc. has built for exec personnel. A superbly beautiful example in strikingly modern design, of the use of their own products—concrete block and pre-cast concrete structural members. It's worth a trip to Miami (Florida, that is) to see it.

Going back to world's records: told you earlier of one made with a Butler Roadbuilders Plant on the Ohio Turnpike. New figures just in are even better than quoted. The Sargeant Construction Company laid 4,368 lineal feet of 24 ft. pavement 10 inches thick in a 16 hour day, 2424 batches in all. That's better than 2½ batches per minute!

A tragic story. Visited a block plant in the South. A man working inside a concrete mixer had died horribly when someone turned the power on. There should always be a master cut-off switch nearby to prevent such accidents.

Told you earlier of a plastic coated concrete pipe used in sewage disposal, appropriately named Krapcote. I was asked to suggest a name for the device which puts the plastic on . . . Came up with "Kraplicator".

Be seeing you,

The Butler Engineer

BUTLER BIN COMPANY
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Richland Co.—right-of-way, structure, approaches, grading, ballast, base, surf. 0.46 mi. STH 80, Heindenreich Bridge and Approaches, $153,400.
2 structures, approaches STH 130, Bear Valley-USH 14, $70,000.
2 structures, approaches STH 171, West Co. Line-Boaz, $60,000.
Rock Co.—structure, grading, ballast, base, c. conc. surf. 0.7 mi. USH 51, Janesville Relocation, $754,300.
Rusk Co.—structure, approaches STH 40, Ialone-North Co. Line, $50,000.
Sawyer Co.—structure, approaches 0.3 mi. STH 40, Couderay River Bridge, Village of Radisson, $200,000.
Trempealeau Co.—structure, approaches 0.3 mi. STH 93, Eleva-North Co. Line, $43,000.
Vernon Co.—structure, approaches 0.7 mi. STH 56, Romance Bridge, $250,000.
Walworth Co.—structure, approaches 1 mi. STH 15, Bardwell R. R. Grande Separation, $250,000.
Washington Co.—structure, grading, ballast, base, c. conc. surf. 13.6 mi. USH 41, 2nd Lane & Interchanges, USH 45-STH 33, $3,000,000.
Waukesha Co.—structure, grading, ballast, base c. conc. surf. 2.84 mi. STH 30 CTH "SS"-CTH "T", $1,499,000.
structure, grading, ballast, base 2.18 mi. STH 30 CTH "T"-STH 164, $1,003,000.
structure, grading, ballast, base 1.89 mi. STH 30, Town Line Rd.-Brookfield Rd., $872,000.
Winnebago Co.—structure, grading, ballast, base, surf. USH 41, Interchange, STH 26, $400,000.
structure, grading, ballast, base, surf. USH 41, Interchange, STH 44, $400,000.

STREETS AND ROADS

▲ **COLORADO**—State Hy. Dpt., 518 State Office Bldg., Denver,
Denver Co.—expans. and imprvs. on East 46th Ave. (Major cross town route) four lanes with interchanges, new bridge, addnl. underpasses and viaducts. $10,000,000. Mark U. Watrous, c/o owner, engr.
Ga., Atlanta—City, City Hall, boulevard from Browns Mill Rd. to Old Hopeville Rd. at Mt. Zion Rd. $340,000. CD 7/23/54.
▲ **Mo., St. Louis County**—St. Louis County, Luman F. Matthews, county suprv., Court House, Clayton, bond election Nov. 22, supplementary roads, bridges and grade crossing projects, $9,836,839; opening and constr. of Innerbelt Hy., $16,100,000. CD 8/25.
Okla., Ardmore—City, voted bonds, urban right of ways. $250,000. Sam Mathews, c/o owner, engr. CD 10/15/52.
Okla., El Reno—Canadian Co., Court House, bond election October 11, urban right of ways. $100,000. Bill Alexander, c/o owner, engr.
▲ **Tex., Dallas**—Dallas Co., Court House, defeated bonds October 1, completion of work on roads and streets in and out of Dallas, Dist. No. 1, $2,000,000; Dist. No. 2, $2,000,000; Dist. No. 3, $2,000,000; Dist. No. 4, $2,000,000. CD 9/22.
Tex., Tahoka—Lynn Co. voted bonds Sept. 24, road work, $200,000.
▲ **Tex., Texas City**—Comrs. Galveston Co., Court House, Galveston, asph. topping most all shelled roads in county. $1,250,000.

EARTHWORK, WATERWAYS

▲† **South Dakota**—U. S. Eng., 1709 Jackson St., Omaha, Neb., Big Bend Dam, Missouri River, 20 mi. upstream from Chamberlain, Lyman and Buffalo Counties. $71,500,000. Project authorized but no appropriation. Preliminary study being made.
Tex., Houston—Meyer Brothers, 1511 Preston St., plans by T. McCleary and Werlin & Kiefner, proj. archts.-engrs., 3501 Buffalo Dr., site earthwork, grading, hard paving around store, $45,000; auto parking center, $80,000.
Newfoundland, Port aux Basques—Dept. P. Wks., Hunter Bldg., Ottawa, Ont., breakwater, $500,000.
▲ **Ontario**—Hydro-Electric Power Comn. of Ontario, 620 University Ave., Toronto, Zone 2, hydro power generating station, Whitedog Falls, 30 mi. northwest of Kenora; capacity tentatively set at 71,700 hp. $1,000,000.

AIRPORTS

▲† **Calif., March Air Force Base**—HANGAR—U. S. Eng., 751 S. Figueroa St., Los Angeles, hangar, wash-rack, and taxiway apron. $4,500,000. Donald R. Warren Co., 930 W. Sunset Blvd., Los Angeles, consult. engr. CD 9/1/54.
† **Calif., Muroc**—DORMITORIES, etc.—U. S. Eng., 751 S. Figueroa St., Los Angeles, plans by Van Dyke & Barnes, 2234 Beverly Blvd., Los Angeles, airmen's dormitories and utilities at Edwards Air Force Base, $160,000.
Iowa, Sioux City—HANGAR, ARMORY—Iowa National Guard, Capitol Bldg., Des Moines, hangar and armory for air department of National Guard at Sioux City Air Force Base. $250,000.
† **Me., Brunswick** — AIRPORT IMPRVS. — First Naval Dist., 495 Summer St., Boston, Mass., aircraft parking area, NOY 91054, $75,000, Wright & Pierce, Main St., Topsham, consult. engrs.; plans by W. Chester Browne & Assoc., 184 Boylston St., Boston, Mass., permanent hangars, NOY 91053, $300,000; training bldg. facility, NOY 91051, $73,000, Naval Air Station. CD 10/30/51.
O., Piqua—AIRPORT IMPRVS.—City, airport imprvs., incl. 3,000 ft. paved landing strip, facilities for plane parking, grading, draining, lighting, Piqua Airport, $140,000.
† **R. I., Quonset Point**—CARRIER PIER—P. Wks. Office, First Naval Dist., 495 Summer St., Boston, Mass., carrier pier est. $200,000. Hayden, Harding & Buchanan, 810 Park Square Bldg., Boston, Mass., consult. engrs. CD 10/31/51.
▲† **R. I., Quonset Point**—AIR STATION—P. Wks. Office, First Naval Dist., 495 Summer St., Boston, Mass., widen existig carrier pier, NOY 91060, Hayden, Harding & Buchanan, 810 Park Square Bldg., Boston, Mass.. consult. engrs.; addns. to 4 hangars NOY 91058, Charles A. Maguire & Assocs., Turk's Head Bldg., Providence, consult. engrs.; steam distr. sys. imprvs., NOY 91063, Jenks & Ballou, 2600 Industrial Trust Bldg., Providence, consult. engrs., above work at U. S. Naval Air Station. Total appropriation. $1,062,000. CD 9/13/51.
▲† **Tex., Laredo**—HANGAR, etc.—U. S. Eng., Box 1229, Galveston, plans by The Kuljian Corp., archt.-consult. engr., 1200 N. Broad St., Phila. 12, Pa., hangar, field maintenance, Laredo Air Force Base, est. $5,000,000. CD 9/16/54.
† **Tex., Sherman**—HOUSING, MESS—U. S. Eng., Box 61, Tulsa 2, Okla., troop housing and mess bldgs., Perrin Air Force Base, $956,000.

LATIN AMERICA

▲ **Venezuela, Maracaibo**—REFINERY—Richmond Exploration Co., subsidiary of Standard Oil Co. of California, 225 Bush St., San Francisco, Calif., U. S. A., plans asphalt refinery, $4,000,000.

AMERICANS ABROAD

Africa, Leopoldville (Belgian Congo)—CONSULATE OFFICE—U. S. Department of State, 21st St. and Virginia Ave., N. W. Wash. 25, D. C. plans by Weed Russell Johnson & Assocs., 550 Brickell Ave., Miami 32, Fla., U. S. A. archts.-engrs., U. S. A. consulate office bldg., northeast corner of Avenue Baron Wahis and Avenue des Aviateurs. Proj. No. 5407. Norman J. Dignum & Assocs., 3356 Virginia St., Miami, Fla., U. S. A., structural engrs., R. L. Duffer, 3356 Virginia St., Miami, Fla., U. S. A., mech. engr.; Rader Engrg. Co., Congress Bldg., Miami, Fla. U. S. A., electrical engrs.

PUBLIC BUILDINGS

Ala., Jacksonville—STUDENT UNION, etc.—Jacksonville State Teachers College, Jacksonville, combination student union bldg.-dining hall. $600,000.
▲† **Ariz., Fort Huachuca**—HOUSING—U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif., site adaptation plans by Blanton & Cole, 155 W. Pennington St., Tucson, army housing facilities, Army Electronics Proving Ground, $2,500,000.
▲ **Calif., Artesia**—COLLEGE—Excelsior Junior College Dist., Artesia, voted $6,000,000 bonds, junior college campus. CD 9/14.
Calif., Covina—SCHOOLS—Charter Oak School District, Covina, $500,000 bond election Oct. 21, schools.
Colo., Fort Collins—SCHOOL—School Dist. No. 5, Fort Collins, voted bonds Sept. 27, school bldg. expans. $700,000. CD 8/9.
▲ **Conn., New Haven** — HOUSING — City of New Haven Housing Auth., 230 Ashman St., plans by Pedersen & Tilney, 111 Whitney Ave., housing proj. $1,000,000. CD 8/29/50.
Ind., Hammond — ARMORY — Indiana National Guard, State House, Indianapolis, 1 unit armory. $210,000. Bids November 1955.
Ind., Indianapolis—STUDENT HOUSING—Indiana University, Bloomington, plans by Edward D. James, 122 E. Michigan St., 115x119 ft. L-shaped addn. to Ball Residence. $375,000.
Ind., Washington — ARMORY — Indiana National Guard, State House, Indianapolis, 1 unit armory. $210,000.
Iowa, Marshalltown—SCHOOL—Bd. Educ., plans by Brooks-Borg, 815 Hubbell Bldg., Des Moines, junior high school, $400,000.
▲† **Kan., Kansas City**—POST OFFICE—General Services Admin., General Services Bldg., F St. between 18 and 19 Sts. N.W., Wash., D. C., plans by Joseph W. Radotinsky, 1401 Fairfax Trafficway, Kansas City, Kan., post office and court house, $2,393,000.
† **Me., Winter Harbor**—BARRACKS—First Naval Dist., 495 Summer St., Boston, Mass., plans by W. Chester Browne & Assoc., 184 Boylston St., Boston, barracks and mess hall and vehicular garage, repair shop and recreation bldg., U. S. Naval Radio Station, NOY 91034, $300,000.
▲ **Md., Elkton**—SCHOOL—Bd. Educ., plans by Johannes & Murray, 855 Pershing Dr., Silver Spring, high school, $1,300,000.
Mass., Somerset—SCHOOL—Town, School Dist., S. L. Hathaway, chn. bldg. comn., Wood St., plans by Israel T. Almy, 56 N. Main St., Fall River, high school addn., County St., $500,000.
▲ **Mich., Troy**—SCHOOL—Troy Twp., Bd. Educ., 3179 Livernois St., $1,500,000 bond election Oct. 31, school program incl. Baker Junior High and new elementary school. Defeated bonds June 13 election. CD 4/26.

(Continued on page 138)

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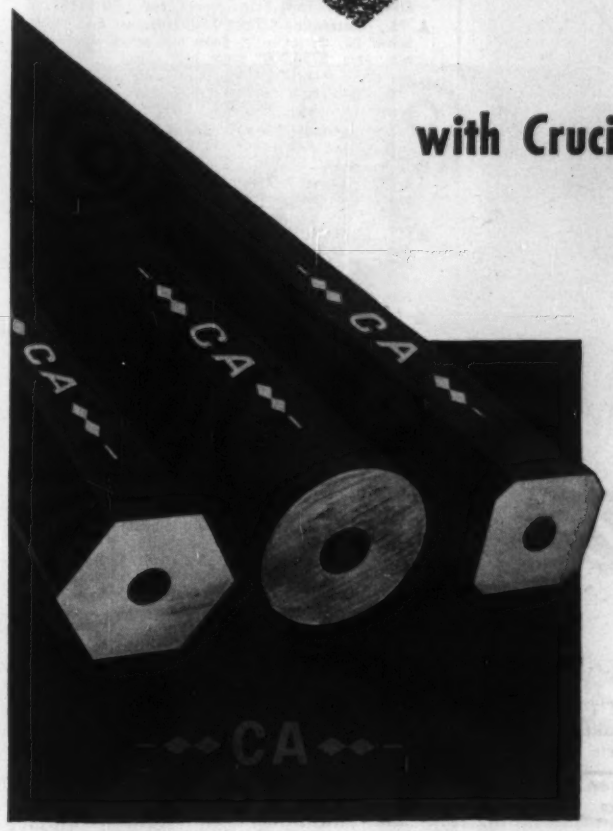

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(Continued from page 136)

Minn., Herman—SCHOOL—Bd. Educ., A. T. Lien, clk., defeated $365,000 bonds Sept. 29, school addns., alterations. Bettenburg, Townsend & Stolte, 1437 Marshall Ave., St. Paul, archts. CD 9/14.

Minn., Hutchinson—SCHOOL—Bd. Educ., Dr. E. W. Lippman, clk., $650,000 bond election Oct. 11, addn. to and remodel existing school, $600,000, Bissell & Belair, 1111 Nicollet Ave., Minneapolis, archts. CD 8/24.

Minn., Minneota—SCHOOL—Bd. Educ., B. Tillemans, clk., $845,000 bond election Oct. 11, school addns., $750,000. Swanson, Matson & Wegleitner, 500 Sexton Bldg., Minneapolis, archts. Bond election date changed. CD 9/16.

▲ **Mo., Chillicothe**—LIGHT AND POWER PLANT—City, Apollonia Moylan, clk., voted $1,385,000 bonds Sept. 27, imprvs. to municipal light and power plant incl. 6,000 KW turbine, 80,000 lb. per hour steam boiler, bldg. addn., change over of power line from 2,400 to 4,160 volt, Stanley Eng. Co., Hershey Bldg., Muscatine, Iowa, consult. engrs. Date of election advanced from 10/4 to 9/27. CD 9/12.

▲ **Mo., St. Louis County**—HOSPITAL AND HEALTH CENTERS—St. Louis County, Luman F. Matthes, county suprv., Courst House, Clayton, bond election Nov. 22, county hospital and health center bldgs., $1,500,000. CD 8/30/54 and 1/3/55.

Mo., St. Louis County—WELFARE CENTER—St. Louis County, Luman F. Matthews, county suprv., Court House, Clayton, bond election Nov. 22, childrens' welfare center and detention home, $800,000. CD 3/7/55.

Mo., Tarkio—SCHOOL—Bd. Educ., $595,000 bond election Oct. 18, school. Defeated bonds Sept. 20. CD 9/13.

Mo., Weston—SCHOOL—West Platte Reorganized School Dist. No. 2, plans by Frangkiser & Hutchens, 5437 Johnson Dr., Kansas City, Kan., existing high school alterations incl. 1 story, 40x70 ft. vocational shop, $348,500. CD 2/26/53.

Neb., Holdrege—HIGH SCHOOL—Bd. Educ., Holdrege, $800,000 bond election November 8, new high school; renovate old high school to junior high school, $800,000. CD 11/10/53.

Neb., Omaha—HIGH SCHOOL—Bd. Educ., 3902 Davenport St., plans by L. A. Daly Co., Insurance Bldg., North Junior High School. $800,000. CD 10/1/54.

▲ **N. J., Blackwood**—HIGH SCHOOL—Black Horse Pike Regional School Bd., Blackwood, high school. $1,000,000.

▲ **N. J., Bridgeton**—HIGH SCHOOL—Bd. Educ. Bridgeton, senior high school. $1,000,000. CD 1/22/51.

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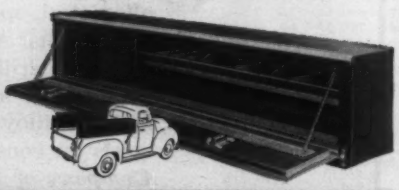

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▲ **N. J., Newark**—HORTICULTURE ADDNS., etc.—Rutgers University, 40 Rector St., plans by Kelly & Gruzen, 744 Broad St., horticulture and poultry bldgs. addns., new floriculture bldg., Rector St. $1,500,000.

N. J., Runnemede—SCHOOL—Runnemede Boro Bd. Educ., Runnemede, plans by Hettel & Albert, Pennsauken, elementary school. $350,000.

▲† **N., M., Albuquerque**—OFFICE—General Services Admin., General Services Bldg., F St. between 18 and 19 Sts., N. W., Wash., D. C., plans by Ferguson-Stevens & Assoc., 111 Amherst Dr. S. E., and Flatow & Moore, 1840 Lomas Blvd. N. E., federal office, $6,227,000.

N. Y., Ardsley—SCHOOL—Bd. Educ., plans by Starret & Van Vleck, Regional Marsh, Howard Snyder, 267 Fifth Ave., New York, Zone 16, junior senior high school, $500,000. CD 5/12/54.

O., Amherst—SCHOOLS—Bd. Educ., $555,000 bond election Jan. 24, schools. Fulton, Krinsky & Dela-Motte, 6014 Euclid Ave., Cleveland, Zone 3, archts. CD 9/22.

▲ **O., Cincinnati**—HOSPITAL—State, Mental Hygiene & Correction, S. Front St., Columbus, plans by Potter, Tyler, Martin & Roth, 128 E. 6 St., replacement hospital annex; plans by Cordes, Pressler, Houck & Assoc., 4939 Paddock Rd., fireproofing main bldg., Longview State Hospital. Total est. $10,000,000. CD 11/16.

O., Cincinnati—SCHOOL—Bd. Educ., 608 E. McMillan St., plans by Garriot & Becker, 800 Broadway, 1 story, partial bsmnt., brick, rein.-con. Inter-Fairmount Elementary School on Beekman St., $700,000. Wm. D. Ehlers, Union Trust Bldg., consult. engr. CD 2/28/55.

▲ **Pa., Coatesville**—SCHOOLS—Brandywine Area Joint School Bd., R. D. No. 2, junior high school in Brandywine Area, $750,000; junior high school in suburban Coatesville area, $750,000.

Pa., Conshohocken—SCHOOL—Conshohocken School Dist., elementary school, Third Ave., $450,000. CD 2/4/54.

▲ **Pa., Royerford**—SCHOOL—Spring-Ford Joint School Dist., senior high school, $1,000,000. CD 2/10/55.

Pa., Souderton—SCHOOL—Souderton School Bd., plans by H. F. Everett & Assoc., Commonwealth Bldg., Allentown, junior and senior high school addn., $350,000. CD 2/4/53.

▲† **S. D., Fort Meade**—HOSPITAL EXPAN.—Veterans Admin., Vermont Ave. between H & I Sts., N. W. Wash. 25, D. C., plans by Ellerbe & Co., First Natl. Bank Bldg., St. Paul, Minn., veterans hospital expans. $3,000,000. Bids in March.

▲ **Tex., Anson**—GENERATING PLANT—City, Dr. J. C. Duff, mayor, electric generating plant with distr. sys. $2,500,000. Wyatt C. Hedrick Co., 1200 T & P Bldg., Fort Worth, consult. engr.

▲ **Tex., Arlington** — SCHOOLS — Arlington Independent School Dist., Arlington, senior high school unit, $1,000,000; junior high school unit, $775,000; grade school, $375,000; Park Row area elementary school, $375,000; S. Collins St. elementary school, $350,000. CD 9/22.

▲ **Tex., Denton**—SCHOOLS—Denton Independent School Dist. Denton, voted bonds Sept. 27, Fulton St. Senior High School. $1,250,000; group of school addns., $400,000; elementary school, $350,000. CD 4/1/53.

Tex., Edna—SCHOOL—Edna Independent School Dist., Edna voted bonds Oct. 1, high school. $750,000. CD 9/23.

Tex., Lubbock—GYMNASIUM—Texas Technological College, Lubbock, plans by Herbert Brasher & Assocs., 1626 13th St., gymnasium, incl. indoor swimming pool. $490,000. CD 7/26/54.

Tex., Mercedes—HIGH SCHOOL—Mercedes Independent School Dist., Mercedes, voted bonds Sept. 10, high school and classroom addns. $500,000. CD 9/8.

Tex., San Antonio—SHOP—National Guard of Texas, Box 5218, West Austin Station, Austin, shop type hangar bldg., 2 mi. east of Loop 13 off Hy. 90. $125,000. Lance Engineers, Inc., 2431 Texas St., Box 3247, Station A, El Paso, consult. engrs.

Tex., Sweetwater—HOSPITAL ADDN.—City, plans by Wyatt C. Hedrick, 1200 T & P Bldg., Fort Worth, hospital addn. $350,000.

† **Va., Abingdon**—POST OFFICE, etc.—General Services Admin., General Services Bldg., Wash. 25, D. C. plans by Eubank & Caldwell, Inc., Boxley Bldg., Roanoke, post office, court house, $543,000.

▲ **Wash., Longview**—WAREHOUSE—Port of Longview, Longview, bond election November 8, 60,000 sq. ft. warehouse space and berthing for addnl. ships. $1,300,000. CD 9/14.

Wash., Mount Vernon—SCHOOL—School Bd. Dist. 320, $400,000 bond election Nov. 8, Jefferson Elementary School. H. Hovind & Assoc., 1500 Westlake Ave. N., Seattle, archts. CD 7/14.

▲ **Wash., Seattle**—HIGH SCHOOL—School District No. 1, 815 4th Ave. N., senior high school in Rainier Valley on Rainier Ave. between Henderson and Cloverdale Sts. $3,000,000. CD 3/15/54.

Wash., Spokane—HIGH SCHOOL—School Dist. 81, W. 503 4th St., Rogers High School addn. $550,000. CD 11/9/54.

Que., Grand'Mere—SCHOOL—Que. Prov. Dpt. Youth & Social Welfare, Parliament Bldgs., Quebec City, plans by Denoncourt & Denoncourt, 1425 Notre Dame St., Three Rivers, 3-story bsmnt., 64x245 ft. arts school; 1 story, bsmnt., 78x245 ft. trades school, rein.-conc. fdn. and frame on both, brick walls. $500,000. Beaulieu, Trudeau, Dubuc, Lalancette & Beaulieu, 4151 Sherbrooke St. W., Montreal, consult. engrs. CD 1/20/55.

(Continued on page 140)

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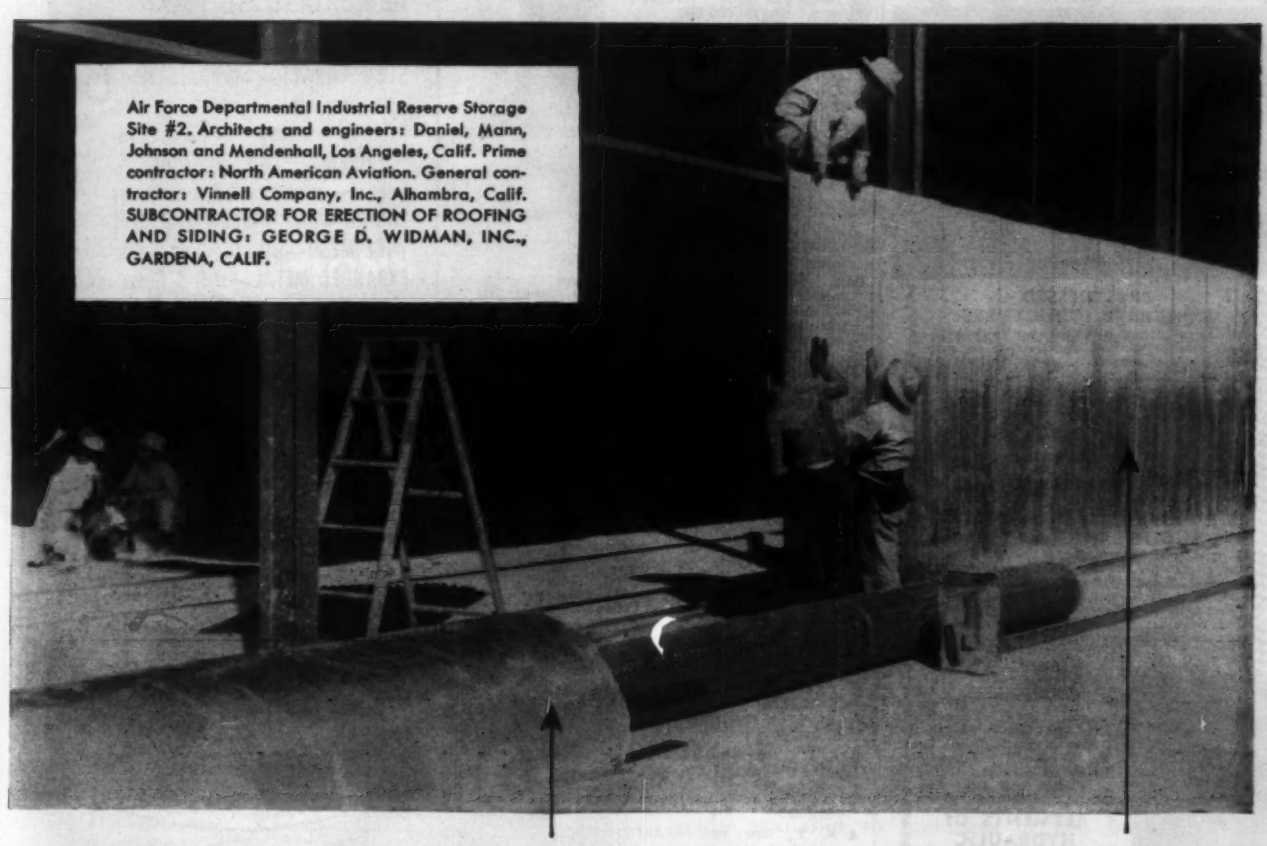

Air Force Departmental Industrial Reserve Storage Site #2. Architects and engineers: Daniel, Mann, Johnson and Mendenhall, Los Angeles, Calif. Prime contractor: North American Aviation. General contractor: Vinnell Company, Inc., Alhambra, Calif. SUBCONTRACTOR FOR ERECTION OF ROOFING AND SIDING: GEORGE D. WIDMAN, INC., GARDENA, CALIF.

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(Continued from page 138)

▲ **Que., Montreal**—POLICE TRAINING SCHOOL—City, City Hall, police training school at Sherbrooke St. E. and Viau St., $1,000,000. Lucien L'Allier, c/o owner; ch. engr.

Que., Rimouski—SCHOOL—La Commission Scolaire de de Rimouski, Rimouski, school, St. Jean Baptiste St. $350,000.

COMMERCIAL BUILDINGS

▲ **Ariz., Phoenix**—APARTMENT—Phoenix Towers Co-operative Inc. c/o Del. E. Webb Co., S. 23 Ave. 13 story, 64 apartment co-operative building. $2,500,000.

▲ **Ariz., Scottsdale**—RESIDENTIAL DEVELOPMENT—Clearwater Hills Development Corp., Scottsdale, plans by Maxwell Dorne, Scottsdale, 450-acre residential development, $8,000,000.

Calif., Los Angeles—DWELLINGS—Gribble Homes, Inc., 7538-A Woodlawn Ave., plans by Wm. H. Bray, 962 N. LaCienega Blvd., 60 frame, stucco dwellings in the Van Nuys Dist. $600,000.

Calif., Redlands—DWELLINGS—J. B. Larrabee, c/o Pierre Woodman, archt., 208 S. Laurel St., Ontario, 53 frame, stucco dwellings, $500,000.

Colo., Denver—BANK—Colorado Industrial Bank, 1717 Champa St., plans by Victor Hornbein, archt.-consult. engr., 714 Pontiac St., constr. and remodel existing 3-story bank. $500,000.

Iowa, Cedar Rapids—HIGH SCHOOL—Catholic Deanery of Cedar Rapids, c/o Rt. Rev. Msgr. William H. Schulte, pastor, Immaculate Conception Parish, 857 3 Ave. S.E., Cedar Rapids, 600-student Catholic High School, K Ave. and Prairie Dr. $400,000.

Mass., Boston—OFFICE—Remington Rand, Inc., 857 Commonwealth Ave., Boston, plans by Coletti Bros., 687 Boylston St., office, Commonwealth Ave. $600,000. Edouard N. Dube, 120 Tremont St., struct. engr. Merrill Assoc., 210 South St., heating and vent. engrs.

Minn., Minneapolis—CHURCH—St. Mary's Greek Orthodox Church, 10 Ave. S. and E. Lake St., plans by Liebenberg & Kaplan, 51 S. 13 St., church, 3450 Irving Ave. South, $600,000.

Minn., Minneapolis—PARISH HALL—Central Lutheran Congregation, L. M. Brings, chn. Bd. Trustees, 1300 Fourth Ave. S., plans by W. F. MacGregor & Assoc., 1108 Nicollet Ave., Minneapolis, parish hall unit at Grand St. and Fourth Ave. South, $450,000.

▲ **Minn., St. Paul**—STORE—Sears, Roebuck & Co., 925 S. Homan Ave., Chicago 7, Ill., retail store, $3,000,000.

Mo., St. Louis—RESIDENCES—Millstone Constr. Co., Inc., 8510 Eager Rd., Brentwood, Zone 19, subdivision incl. 50 or more deluxe type residences on 110 acre tract extended from Conway Rd. to Daniel Boone Parkway (U.S. 40), west of Ballas Rd., $500,000.

Mo., Springfield—CHURCH—Central Assembly of God Church, Booneville and Calhoun Sts., plans by R. P. Stahl, 530 S. National St., church addn., $500,000. CD 11/19/54.

N. J., Atlantic City—SUPER MARKET—American Stores, Co., 424 N. 19 St., Phila., Pa., super market and parking lot. $350,000. A. J. Faulhaber, c/o owner, ch. engr.

▲ **N. Y., Centereach**—SHOPPING CENTER—Housing Associates, 22 W. 48 St., New York, Zone 19, Eastwood Shopping Center on site bounded by Jericho Turnpike, Mark Tree Rd. School St. and Eastwood Blvd., $4,000,000.

▲ **N. Y., New York**—APARTMENT—Columbus Circle Apartments, Inc., c/o Sylvan & Robert L. Bien, archts., 33 W. 46 St., New York, Zone 19, two 14 story apartments at 910-24 Ninth Ave. and 1-17 Columbus Ave., $4,500,000.

N. Y., New York—OFFICE—Thomas M. Graham, 570 Seventh Ave., Zone 36, plans by Giorgio Cavaglieri, 250 W. 57 St., Zone 19, 4 story office and store at 426-428 W. 34 St., $350,000.

▲ **N. Y., New York**—APARTMENT—Goodman-Herman Co., c/o H. I. Feldman, archt., 415 Lexington Ave., Zone 17, 20 story, 490 unit apartment on west side of First Ave. between 71 and 72 Sts., $10,000,000.

▲ **N. Y., New York**—OFFICE—International Business Machines World Trade Corp., 807 United Nations Plaza, Zone 17, plans by Harrison & Abramowitz, 630 Fifth Ave., Zone 20, 11 story office at 348-50 E. 46 St. and 819-21 First Ave., $1,622,000.

▲ **N. Y., New York**—STUDENT CENTER—New York University, Washington Square, plans by Harrison & Abramovitz, 630 Fifth Ave., Zone 20, Washington-Loeb Student Center, Washington Square, West Broadway, West Third and Thompson Sts., $3,000,000. Work to begin in Spring. CD 10/10/52.

▲ **N. Y., New York**—LAW SCHOOL—Columbia University, 116 St. and Broadway, plans by Harrison & Abramovitz, 630 Fifth Ave., Zone 20, Law School and dormitory on campus, $6,000,000. CD 2/10/54.

▲ **O., Brookpark**—HOMES—Arnold King, Builder, 4521 Brookpark Rd., Parma, Zone 29, plans by Richard H. Cowan, 19427 Winslow Rd., Shaker Heights, Zone 22, 84 ranch type homes W. 130 St. area of Brookpark Village, $1,500,000.

O., Cincinnati—SCHOOL—Catholic Diocese of Cincinnati, 423 Commercial Square, Elder High School addn., Vincent and Regina Aves., $750,000. Constr. in 1956.

O., Cincinnati — COMMUNITY CENTER — Council of Churches, Transportation Bldg., plans by Potter, Tyler, Martin & Roth, 128 E. Sixth St., memorial community center addn., alterations incl. 4 story brick bldg., $400,000.

(Continued on page 142)

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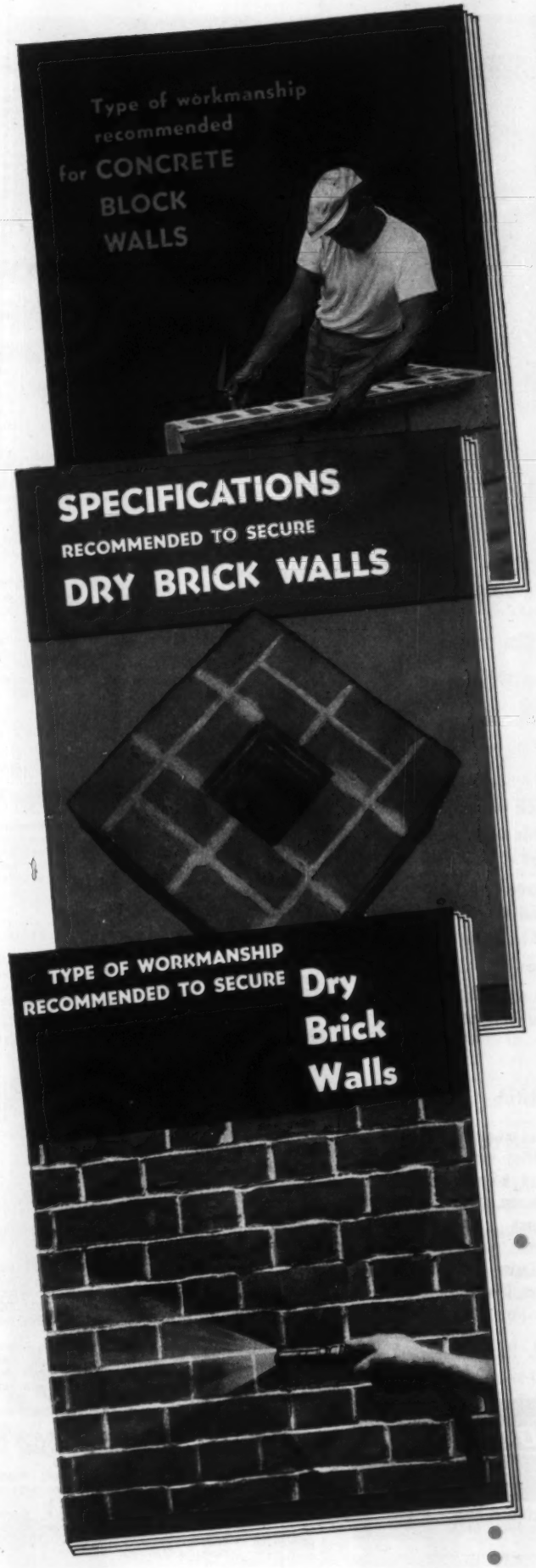
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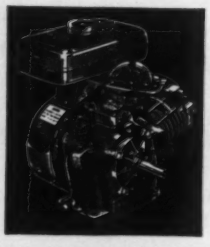

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(Continued from pg. 140)

O., Cleveland—OFFICE—Arthur G. McKee & Co., 2300 Chester Ave., Zone 14, plans by Arthur McKee & Co., 2300 Chester Ave., Zone 14, 2 story, 30,000 sq. ft. office on site fronting on Euclid Ave. to rear of present headquarters, $500,000. Bids in Jan.

O., Dayton—FACULTY HOUSE, CHAPEL, etc.—Chaminade High School, Franklin St., faculty house, chapel, dining room, recreational facilities, storage rooms, $400,000. CD 10/11/49.

▲ O., Highland Heights—HOMES—Zehman-Wolf-Sherman Constr. Co., 13484 Cedar Rd., Cleveland, Zone 18, 400 homes on 166 acre site northwest of Highland-Miner Rd. intersection, $8,000,000. To start next summer after installation of streets and sewers.

▲ O., Shaker Heights—APARTMENT—Sidney H. Horwitz, 4515 Superior Ave., Cleveland, Zone 3, plans by Geo. Howard Burrows, and Hinman & Gabriel, 16104 Kinsman Rd., Cleveland, Zone 20, 4 story, brick, stone apartment, $1,000,000. Constr. in the Spring.

▲ O., Shelby—HOMES—Fred W. Orr & Co., Union Commerce Bldg., Cleveland, Zone 14, 100 prepaneled homes on 54 acre site, $2,400,000.

Okla., Oklahoma City—BANK ANNEX—Liberty National Bank & Trust Co., Liberty Bank Bldg., plans by Sorey, Hill & Sorey, 809 N.W. 36 St., bank annex at 118 N.W. 2nd St. for bank and garage purposes. $500,000.

▲ Okla., Tulsa—HOTEL—Alvin Hotel Co., 627 S. Main St., plans by W. H. Wolaver, 1851 E. 71 St., hotel, S.E. 51 St. and Peoria, $1,000,000.

▲ Pa., Phila.—HOSPITAL—Presbyterian Hospital, 51 N. 39 St., 3 and 6 story hospital wings, $4,000,000.

▲ Pa., Phila.—OFFICE—United Lutheran Church in America, 1228 Spruce St., plans by T. Norman Mansell, 1831 Chestnut St., office, chapel, auditorium, parking, $1,300,000. CD 10/1/46.

Pa., Sellersville — HOSPITAL — Grandview Hospital, Sellersville, plans by Charles M. Tolley, Telford, hospital addn., $500,000. CD 10/14/54.

▲ Tex., Austin—HOTEL, RESORT CENTER—Lake Austin Development Corp., c/o John McCronkhite, 1007 W. 24 St., plans by Lundgren & Maurer, 1007 W. 24 St., hotel and resort center, $1,250,000.

▲ Tex., Farmers Branch—SHOPPING CENTER—The Cato Corp., c/o C. Grady Cates, Jr., 9747 Harry Hines Blvd., Dallas, plans by Harwood K. Smith & Assocs., Mercantile Bank Bldg., Dallas, shopping center, Valwood Park Subdivision. $5,000,000.

▲ Tex., Garland—DWELLINGS—Centex Constr. Co., 4606 Greenville St., Dallas, 19 dwellings, $352,225; 23 dwellings, $368,120; 31 dwellings, $389,195; 28 dwellings, $377,000, in area Miller Rd. at 5th St.

▲ Tex., Houston—DWELLINGS—Glenbrook Development Corp., 7445 Park Place Blvd., 30 dwellings, $380,185; 26 dwellings, $369,190; 28 dwellings, $377,115; 24 dwellings, $348,500; 25 dwellings, $361,515.

▲ Tex., Houston—DWELLINGS—Lakeside Oaks Development Corp., 7445 Park Place Blvd., 25 dwellings, $364,290; 30 dwellings, $380,115; 28 dwellings, $371,165; 23 dwellings, $355,500; 31 dwellings, $389,000; 20 dwellings, $347,500 in Glenbrook Valley area.

▲ Tex., Houston—STORE—Meyer Brothers, 1511 Preston St., plans by T. McCleary and Werlin & Kiefner, proj. archts.-engrs., 3501 Buffalo Dr., store. $1,500,000. CD 9/26.

▲ Tex., Houston—STORE—Neiman-Marcus Co., Main and Ervay Sts., Dallas, suburban retail store, 23-acre site. $5,500,000. (not for immediate constr.).

▲ Tex., Houston—DWELLINGS—Frank W. Sharp, Developer, 6302 Bellaire Blvd., 32 dwellings, $377,410; 28 dwellings, $363,310; 36 dwellings, $391,000; 35 dwellings, $383,335; 38 dwellings, $398,615; 29 dwellings, $369,000; 25 dwellings, $347,500 in exten. of "Scenic Woods".

▲ Tex., Houston—DWELLINGS—Frank Teague & Assocs., Union Natl. Bank Bldg., 41 dwellings, $375,000; 38 dwellings, $369,130; 36 dwellings, $360,500; 48 dwellings, $384,000; 46 dwellings, $376,150; 44 dwellings, $371,075, off Steubner-Airline Rd., adjacent to Lincoln City.

▲ Tex., Houston — DWELLINGS — Lewis O. Tyra & Assocs., 5519 Lawndale St. plans by Dunaway & Jones, 2425 Ralph St. and Crochet & Carroll, 1st. Natl. Bank Bldg., 28 brick dwellings, $371,500; 32 brick dwellings, $379,000; 26 brick dwellings, $365,000; 35 brick dwellings, $386,400; 38 brick dwellings, $392,910; 25 brick dwellings, $350,000 in area Overton Rd. and Southern Oaks Blvd.

▲ Tex., Richardson — DWELLINGS — Lovvorn-Davison, Inc., 6617 Snider Plaza, Dallas, 30 dwellings, $386,110; 28 dwellings, $378,215; 36 dwellings, $409,000; 24 dwellings, $351,135; 33 dwellings, $392,500; 26 dwellings, $369,200 in Unit No. 5, Richardson Heights.

▲ Tex., San Antonio—SHOPPING CENTER—Empire Plaza, c/o Jaffe & Martin, 4623 Blanco Rd., plans by Valdez & Williams, proj. archts., 918 Manor Dr., shopping center, 11-acre tract, S. Zarzamora and Brady Blvd. $1,000,000.

▲ Tex., Texas City—DWELLINGS—Freeway Park Development Corp., Inc., 5519 Lawndale St., Houston, 25 dwellings, $350,270; 36 dwellings, $398,000; 34 dwellings, $390,165; 27 dwellings, $368,160; 31 dwellings, $381,125; 28 dwellings, $373,290.

▲ Wash., Kennewick—HOUSING—B. Lampson, Pasco, housing development near Hawthorne School west of here. $1,500,000. Work to start after Jan. 1.

▲ Wash., Tacoma—COMMERCIAL BLDGS.—F. Snyder et al, Tillicum, 8 bldgs. totaling 200,000 sq. ft. for commercial development in Lakes District. $1,500,000.

(Continued from pg. 145)

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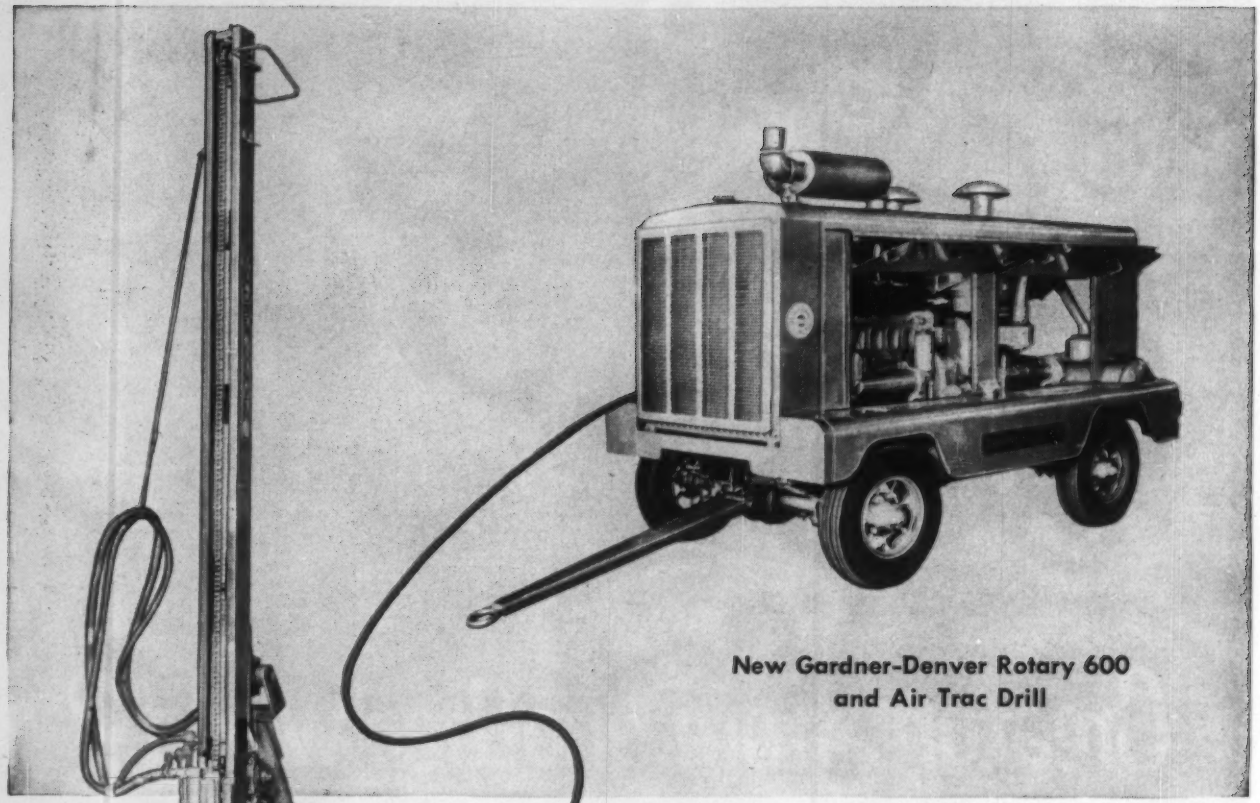

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Here's a "one-two" punch that's a knock-out to tough construction problems . . . Gardner-Denver "Air Trac"® Drill and Rotary 600, the team to use over rough terrain or city street, wherever you have the need for fast, low-cost drilling.

"AIR TRAC" takes you practically anywhere with its full traction rubber shoes. Two 5-cylinder radial air motors provide the power.

Self-stabilizing Tee Bar and chain feed drilling mast remain constant over rough terrain.

Equipped with powerful DH123 (4½") drill or DH99 (4") drill.

Furnished with Gardner-Denver Ring Seal Shanks and Sectional Drill Rods.

Pivoted Drawbar for towing compressor or service sled.

ROTARY 600, the reliable rotary with more new advantages than any other rotary.

Vital parts can be inspected and serviced in a matter of minutes.

Automatic water-cooling and circulation system warms oil before starts, maintains best operating temperature in all weather.

Metered Oil Flow assures positive lubrication, sealing and cooling under all conditions.

Thrift Meter saves fuel; wear and tear on engine and compressor.

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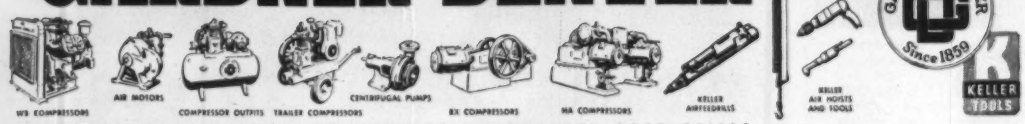
GARDNER-DENVER



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THE QUALITY LEADER IN COMPRESSORS, PUMPS AND ROCK DRILLS FOR CONSTRUCTION, MINING, PETROLEUM AND GENERAL INDUSTRY

Gardner-Denver Company, Quincy, Illinois
In Canada: Gardner-Denver Company (Canada), Ltd., 14 Curity Avenue, Toronto 16, Ontario

(Continued from pg. 140)

▲ Man., Winnipeg — OFFICE — Investors Syndicate of Canada Ltd., 345 Donald Ave., plans by Moody & Moore, 295 Broadway Ave. 45,000 sq. ft. office bldg., Broadway Ave. and Smith St., $1,000,000.

Ont., Hamilton—STORE EXPANSION—T. Eaton Co. Ltd., 190 Yonge St., Toronto, plans by W. R. Souter & Assocs. 36 James St. S., 6 story, bsmt., 80x140 ft. department store expansion, $750,000. Norman Wagner & Assocs., 42 James St., N., consult. engrs. CD 2/21.

▲ Ont., St. Catherines—SHOPPING CENTER—Ridout Real Estate, Ltd., 46 Bloor St. W., Toronto, shopping center, 33-acre site, Lake St. and Queen Elizabeth Hy. est. $1,000,000.

▲ Ont., Toronto—OFFICE—Hubert Buildings, Ltd., 496 Church St., 10-story, approx. 100,000 sq. ft. office at University Ave. and Richmond St. $3,500,000.

Ont., Toronto—SHOPPING CENTER—Owner c/o Venchiarutti & Venchiarutti, archts., 2941 Bathurst St., shopping center, 23 stores, incl. department store in 23-acre site, Bayview and Sheppard Aves., $850,000.

▲ Ont., Toronto—SHOPPING CENTER—Owner, c/o Gibson Brothers Ltd., realtors, 357 Bay St., Toronto, plans by Crang & Boake, 79 Huntley St., Toronto, U-shaped Indian Grove Shopping Center, incl. 30 stores, parking space for 600 cars, supervised playground, Bloor and Dundas Sts. $2,500,000. CD 10/3.

Que., Quebec City—CHURCH—Roman Catholic Parish of St. Patrick's 250 Grande Allee, plans by Hel. Laberge, 140 St. John St., Quebec City and Louis N. Audet, 1100 Prospect St., Sherbrooke, church superstructure, $500,000. CD 2/11/54.

▲ Que., Sherbrooke—HOUSING—Owner c/o Aime Biron, 650 Vimy St. No., Sherbrooke, 300-unit housing program near Chemin de Ste. Elie d'Orford, between King St. W. and Portland Blvd., $1,500,000.

INDUSTRIAL BUILDINGS

▲ Calif., Fullerton—PLANT—Rheem Manufacturing Co., 477 Madison Ave., New York, N. Y., plans by Van Dyke & Barnes, 2234 Beverly Blvd., Los Angeles, Zone 57, 1 story, 400,000 sq. ft. plant for automotive division. $6,500,000. CD 10/4.

Idaho, Potlatch—GRAIN STORAGE—Latah County Grain Growers, Inc., Moscow, grain storage facilities at Kennedy Ford, near here. $100,000.

▲ Ill., Decatur—PLANT—Pittsburgh Plate Glass Co., 420 Fort Duquesne Blvd., Pittsburgh 1, Pa., glass producing plant. $4,000,000.

Ind., Evansville—WAREHOUSE—North 41 Inc., 220 N. W. 1 St., 180x200 ft. wholesale dry goods warehouse and office. $150,000. Hans F. Geiger, 1737 N. Meridian St., Indianapolis, engr.

Ind., Fort Wayne—LAUNDRY—Coverall Rental Service, 617 S. Barr St., 150x200 ft. laundry plant, Brooklyn Ave. between Packard and Gruber Aves. $125,000.

Kan., Wichita—TERMINAL—Santa Fe Trailways Bus Co., 310 S. Broadway, plans by W. I. Fisher, 301 S. Main St., truck terminal, $125,000.

▲ Minn., Golden Valley (P. O. Minneapolis)—FACTORY—OFFICE—G. H. Tennant Co., 2530 N. Second St., Minneapolis, plans by Magney, Tusler & Setter, 303 Roanoke Bldg., Minneapolis, 1 story factory-office of Hy. No. 100 and Olson Hy., $1,000,000. CD 8/31.

Mo., St. Louis—TERMINAL—Strickland Transportation Co., Inc., 1427 S. 3 St., Zone 4, 519x640 ft. freight terminal and warehouse on 6 acre tract at northwest corner Grand Blvd. and Chouteau Ave., $100,000.

▲ N. J., Bloomfield — RESEARCH-DEVELOPMENT CENTER—Colgate-Palmolive Co., 85 Hudson St., Jersey City, plans by Wheeler & Becker, Free Press Bldg., Detroit, Mich. research and development center. $5,000,000-$8,000,000. CD 10/4.

N. J., Harrison—PLANT—Nopco Chemical Co., 15 Essex St., 15,000 sq. ft. concrete, steel pilot plant, foot of Essex St. $500,000. Engineers Co. Inc., 487 Oregon St., Newark, consult. engr.

N. Y., Huntington — FACTORY — Airborne Instruments Laboratory, Inc., 160 Old Country Rd., Mineola, plans by Walter M. Cory, 36 W. 40 St., New York, Zone 36, factory on 50 acre tract on Rt. 110, $200,000. CD 8/11.

▲ N. Y., Sidney—PLANT—Bendix Aviation Corp., Scintilla Div., Sherman Ave., mfg. and research plant, $2,000,000.

N. D., Bismarck—WAREHOUSE—Super Valu Stores, Inc., Hopkins, Minn., warehouse on Airport Rd., ½ mi. east of 19th St. railroad crossing, $500,000.

▲ O., Cleveland—PLANT—Robert Gair Co., Inc., Ohio Corrugated Box Div., 155 E. 44 St., New York 17, N. Y., 92,500 sq. ft. shipping container mfg. plant on 23.71 acre site on Emery Ave. near W. 150 St., $1,000,000.

▲ O., Macedonia — PLANT — Chrysler Corp., 3675 E. Outer Dr., Detroit, Mich., plans by Albert Kahn Associated Architects & Engineers, Inc., 345 New Center Bldg., Detroit, Mich., auto body stamping plant, $85,000,000. CD 10/4.

O., Sidney—FACTORY—Sidney Daily News, Sidney, factory addn. to newspaper plant, $100,000.

Okla., Oklahoma City—GARAGE—First National Bank & Trust Co., 120 N. Robert St., plans by Sorey, Hill & Sorey, 809 N. W. 36 St., garage and parking facilities, 119 W. Main St. $400,000.

▲ Pa., Carbondale—PLANT—National Paper Corp. of Pennsylvania, 205 E. 42 St., New York, N. Y., hardwood pulp plant, total est. $15,000,000. ($7,000,000 for equip.).

Pa., Duncanville—WAREHOUSE—Force Electric Co., 2903 Inpide Dr., Altoona, plans by Geo. Puderbaugh, 1511 13 St., Altoona, 1 story, 75x300 ft., steel, warehouse, $100,000.

(Continued on pg. 148)

LOW COST POWER
to help you meet contract schedules

Frederick
CAST semi-steel **DROP BALLS**

You can eliminate slow, or expensive, wrecking methods such as drilling or blasting by using labor-saving Frederick Drop Balls. These low cost production tools mean real power for wrecking structures or smashing paving—power when you want it, where you want it. "Pear-shape" design withstands greater impact and prevents excessive ball movement—means heavier, more accurate blows. Rugged and durable, they give long, economical service with very little maintenance. Nickel alloy standard in all balls 4000 lbs. or over—special alloys furnished if requested. Exclusive E-Z Swing steel eye prevents hook from slipping out unexpectedly—gives more cable protection. Balls can be furnished with replaceable pins, if requested. Also available are special release hooks for free dropping.

Wide range of sizes and weights:

Pear shape (lbs.).....	1500	2000	3300	4000	5200	6500	8000
Ball shape (lbs.).....	500	1000	2000	5200			
Spherical shape (lbs.).. (for magnet use)	470	950	1650	2400	3000	3700	5400

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FREDERICK *Established 1890* MARYLAND
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Makers of manhole frames, covers and steps • Storm Gratings
Meter Frames and Covers • Centrifugal Pumps • Gray Iron Castings

Outstanding performance is guaranteed by the fact that the ECONMOBILE has been 100% stressed at every point. And—with the loader carried over the large rear tires—the load is properly distributed throughout the entire chassis.

The ECONMOBILE has these other outstanding features: Hoisting height up to 22'; reach up to 6'; power; stability; versatility; mobility; maneuverability; traction and flotation.

The savings in general labor effected through the use of the ECONMOBILE exceeds 70%.

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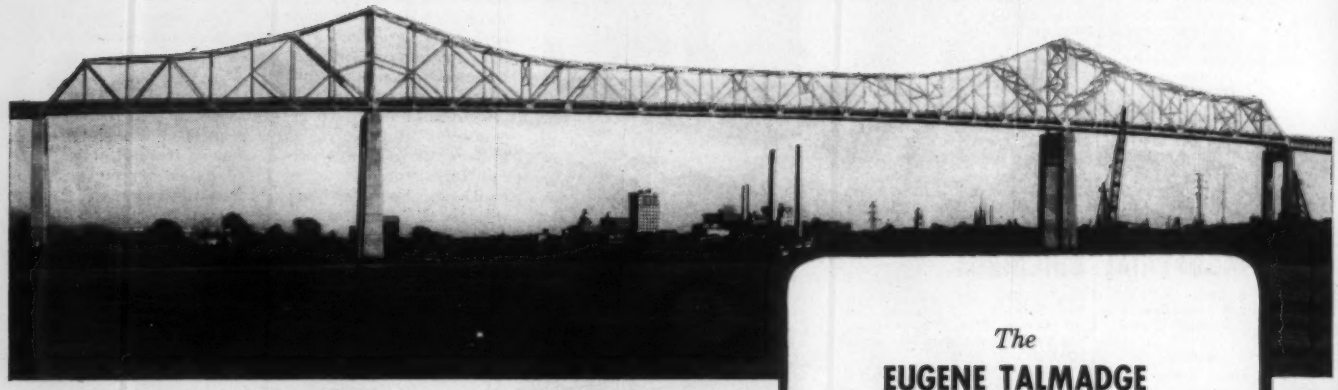
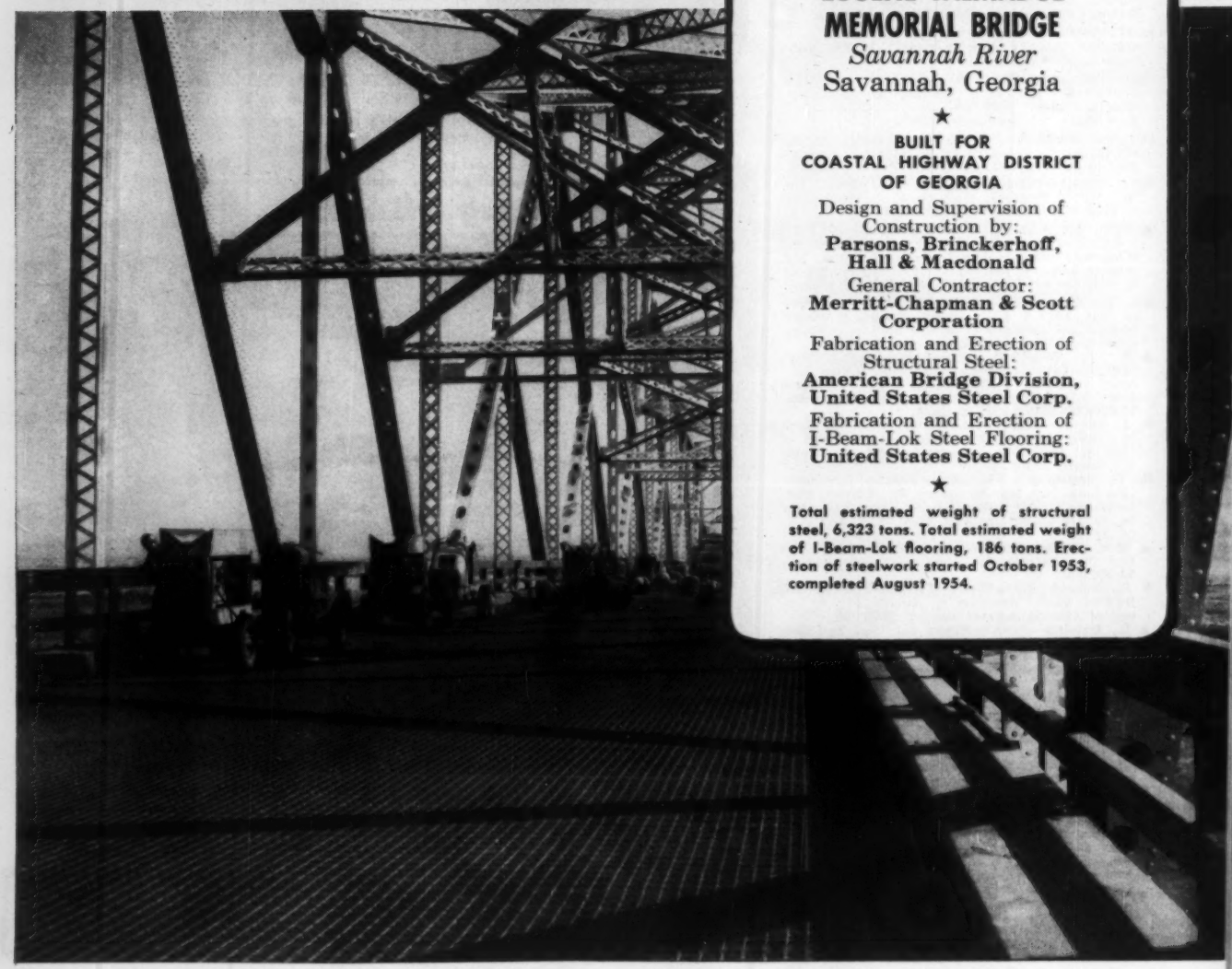
AMERICAN ROAD EQUIPMENT COMPANY
4306 North 28th Street Omaha, Nebraska
Phone PLeasant 2575

On 710-ft. main span of this high level

Open type USS I-BEAM-LOK





The

EUGENE TALMADGE MEMORIAL BRIDGE

Savannah River

Savannah, Georgia

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BUILT FOR COASTAL HIGHWAY DISTRICT OF GEORGIA

Design and Supervision of Construction by:
Parsons, Brinckerhoff, Hall & Macdonald

General Contractor:
Merritt-Chapman & Scott Corporation

Fabrication and Erection of Structural Steel:
American Bridge Division, United States Steel Corp.

Fabrication and Erection of I-Beam-Lok Steel Flooring:
United States Steel Corp.

★

Total estimated weight of structural steel, 6,323 tons. Total estimated weight of I-Beam-Lok flooring, 186 tons. Erection of steelwork started October 1953, completed August 1954.

cantilever bridge...

steel flooring

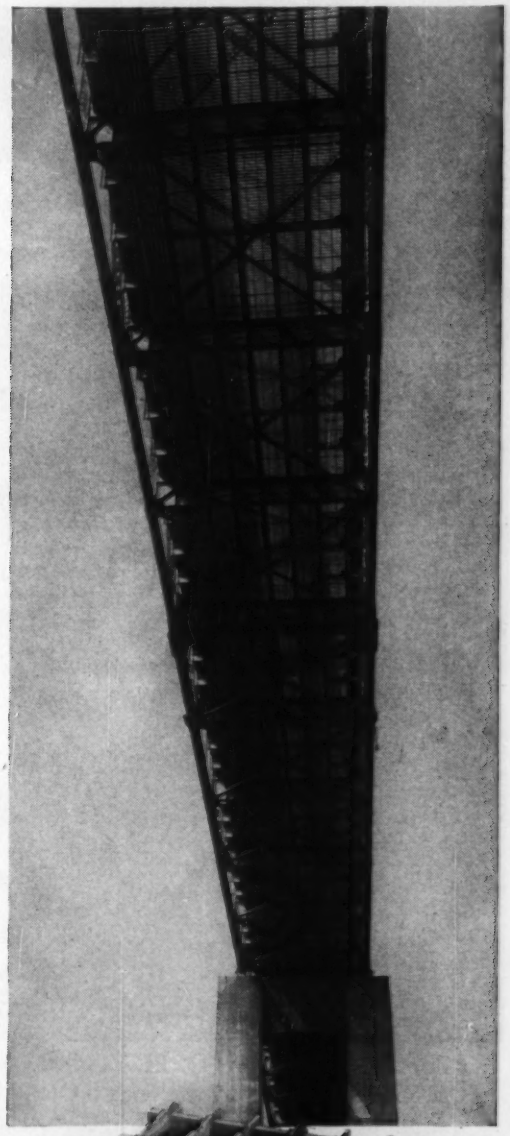
reduced deadload stress

approx. 30%

A recent and interesting example of American Bridge workmanship is the 6,034-foot structural steel section of the long Eugene Talmadge Memorial Bridge over the Savannah River, at Savannah, Georgia.

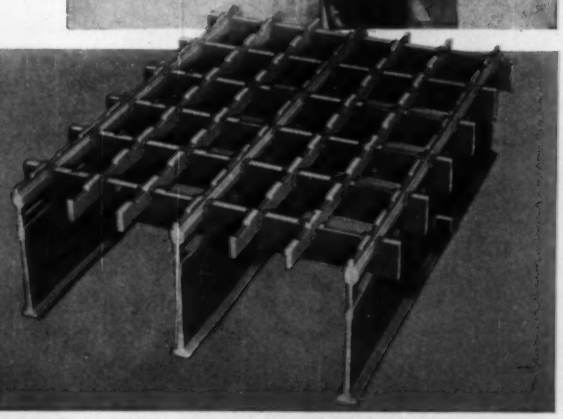
Fabricated and erected by American Bridge, this high-level main bridge comprises a 1,268-foot Through Cantilever Truss structure with a central span of 710 feet, and two anchor spans, each 279 feet long. Approaches are deck plate girder spans, 2,148 feet, and 2,618 feet in length respectively.

The use of lightweight USS I-Beam-Lok open type steel flooring for the two-lane 28-foot roadway on the 710-foot channel span resulted in substantial reductions in deadload stresses throughout the trusses. This permitted the adoption of comparatively short anchor arms, and made possible large savings in the total weight of steel. For example, the stress in the top chords over the main pier is approximately thirty percent less than it would be if a concrete deck were used on the channel span.



USS I-BEAM-LOK... the heavy-duty steel flooring for modern traffic

USS I-Beam-Lok open type steel flooring is available in units measuring 6'2" in width and up to 49' in length. With its strong, full 5" depth, it can be applied directly to stringers on spans up to 4' centers to permit H20-S16 loadings. Open Type I-Beam-Lok does not require secondary supports. It combines weight savings and reduced costs with roadway rigidity, ease of erection, and low maintenance costs. For more information about the time-and-money saving advantages of this superior lightweight steel flooring in bridge construction, contact the sales office nearest you, or write direct to our Pittsburgh headquarters.



AMERICAN BRIDGE DIVISION, UNITED STATES STEEL CORPORATION, PITTSBURGH, PA.
COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO · TENNESSEE COAL & IRON DIVISION, FAIRFIELD, ALA.
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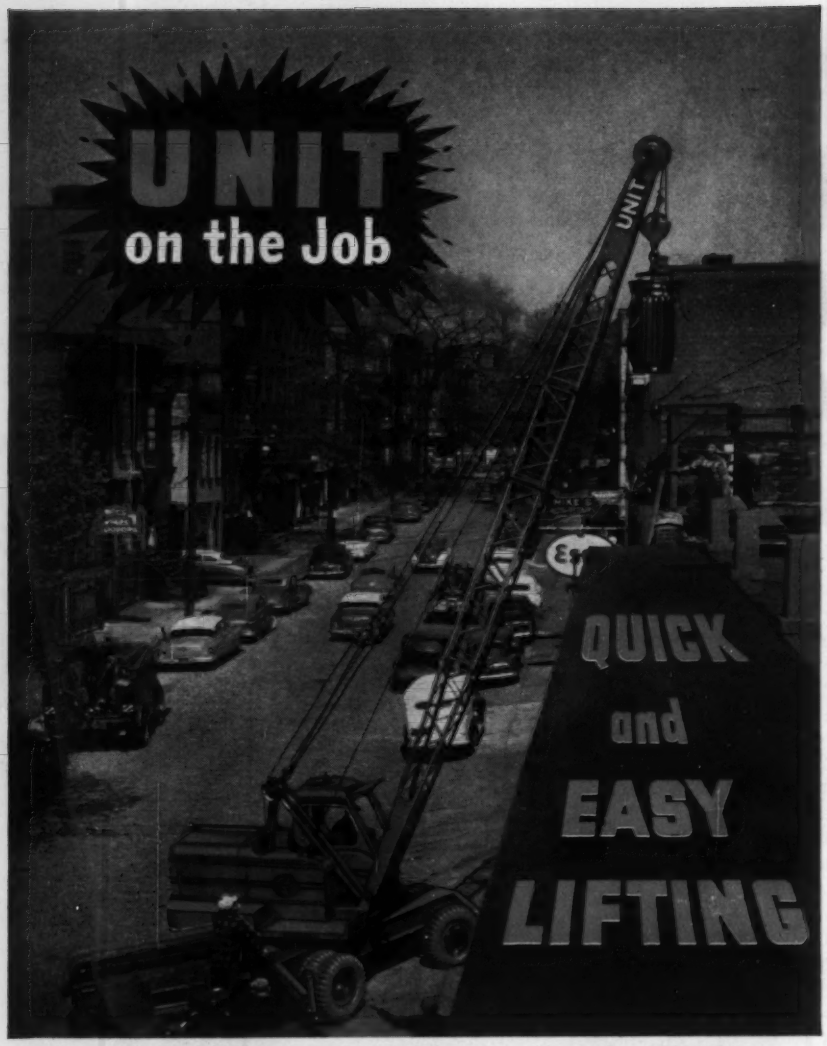
USS I-BEAM-LOK

USS

UNITED STATES STEEL



For SM-O-O-THER OPERATION you'll prefer UNIT 357 Mobile Crane equipped with TORQUE DRIVE. It's a machine that travels anywhere . . . works efficiently where space is limited. Controlled and operated by ONE man. Powered by ONE engine. Provides full-circle, fast-cycle operation. Easy hydraulic steering from within the FULL-VISION CAB. Promotes safety. For HIGH PRODUCTION and LOW MAINTENANCE get the facts regarding UNIT 357.

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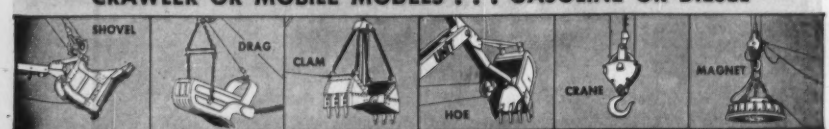
½ or ¾ YARD EXCAVATORS...CRANES UP TO 20 TONS CAPACITY
CRAWLER OR MOBILE MODELS . . . GASOLINE OR DIESEL



All Models Convertible to ALL Attachments!

(Continued from page 145)

Pa., Phila.—WAREHOUSE-OFFICE—United States Rubber Co., 1230 Avenue of the Americas, New York, N. Y., warehouse and office, $800,000. H. H. Rinehart, c/o owner, engr., F. E. Worley, c/o owner, asst. director, engr.

Tex., Houston—SERVICE CENTERS—United Gas Corp., 1120 Texas St., plans by Hamilton Brown, 2017 W. Gray St., distribution service and storage centers, Job No. 1, $175,000; Job No. 2, $225,000; Job No. 3, $200,000; Job No. 4, $210,000; Job No. 5, $190,000. CD 9/9.

▲ Tex., Seadrift—PLANT—Carbide & Carbon Chemicals Co., Seadrift, expans. program (an enthanolamine production unit), $4,500,000.

▲ Wash., Ferndale—PLATFORMER, etc.—General Petroleum Corp., (sub.) Socony-Vacuum Co. Inc., 612 S. Flower St., Los Angeles, Calif., addnl. platformer and related work at oil refinery. $3,600,000. Work to start early next year.

Wis., Blooming Grove—WAREHOUSE—Lindsay Brothers, 126 S. 2 St., Milwaukee, plans by Eschweiler & Eschweiler, 720 E. Mason St., Milwaukee, 60,000 sq. ft. warehouse, $300,000.

Ont., Leamington—PLANT—H. J. Heinz Co. of Canada, F. T. Sherk, mgr., Leamington, 1 story, 45x175 ft., brick, steel, concrete block sterilizing plant addn. $125,000.

Que., Montreal—SHOP—Innes Equipment (Quebec) Ltd., 155 Decarie Blvd., St. Laurent, plans by Grattan D. Thompson, 1241 Guy St., 1 story, approx. 14,000 sq. ft. machine shop and parts dpt., offices. $100,000.

Que., Shawinigan Falls—BOILER HOUSE—Canadian Industries Ltd., 1253 McGill College Ave., Montreal, boiler house at chemical plant to house two oil-fired boilers, generating 30,000 lbs. steam per hour. $600,000.

▲ Sask., Regina—PLANT—Prairie Pipe Co., c/o Fluor Corp. 2500 Atlantic St., Los Angeles, Calif., plant to mfr. cold formed electrically welded pipe. $3,500,000.

UNCLASSIFIED

▲ Calif., Hayward—PARKING—City, City Hall, off street parking lot (700 cars), metered parking areas and cost of land and imprvs. $1,000,000. Raymond E. Layton, 1011 McKeever Court, consult. engr. CD 4/23/54.

Iowa, Council Bluffs—RECREATIONAL AREA—B. P. O. E. (Elks Lodge, No. 531), 530 1st Ave., recreational area, swimming pool, etc. $120,000.

Ky., Covington—COMMUNITY HOUSE—Fifth Third Union Trust Co., Fourth St., Cincinnati, O., plans by Bernard Pepinsky, Union Trust Bldg., Cincinnati, O., 60x100 ft. community house in Devou Park, $125,000. CD 4/8.

▲† Mass., Boston—PIERS—First Naval Dist., 495 Summer St., replacement of wood Piers 2 and 7, Charlestown, NOY 91033, Hayden, Harding & Buchanan, 810 Park Square Bldg., consult. engrs.; imprv. steam plant (2nd increment), Charlestown, NOY 90055, Boston Naval Shipyard, Charles T. Main, Inc., 80 Federal St., Boston, consult. engr. Total appropriation $8,441,000.

▲ Minn., St. Paul—STADIUM—City, Dpt. Parks, Playground and Pub. Bldgs., B. T. Holland, comr., City Hall, stadium at site E. of Snelling Ave. between Northern Pacific and Chicago and Northwestern tracks, $1,500,000. Toltz, King & Day, 1509 Pioneer Bldg., St. Paul, and Praeger-Kavanagh, 126 E. 38 St., New York, N. Y., consult. engrs. CD 8/18.

Mo., Kirksville—SWIMMING POOL—City, voted $130,000 bonds Sept. 20, swimming pool.

▲ Mo., St. Louis County—PARKS and PLAYGROUNDS—St. Louis County, Luman F. Matthews, county suprv., Court House, Clayton, bond election Nov. 22, development of parks and playgrounds in various parts of county, $2,200,000. CD 2/19/54.

▲ Nebraska—RURAL DISTRIBUTION LINES, etc.—Nebraska Public Power Sys., 2416 14th St., Columbus, transmission line from North Loup to Loup City and new substation at North Loup, $400,000; substation at McCook, $175,000; substation, Lexington, $457,000; substation addn. at Humboldt, $325,000; equipment for four substations at Lincoln, $263,500. P. E. Hampton, c/o owner, ch. engr. CD 5/31/49.

▲ O., Cincinnati—PLAYGROUND—City, Public Recreation Comn., 1100 Sycamore St., playground imprvs., swimming pools, shelter houses, $1,659,700. Constr. in 1956-60. CD 11/5/54.

O., Montville—OBSERVING STATION—Case Institute of Technology, 10900 Euclid Ave., Cleveland, Zone 6, observing station, $250,000. The Austin Co., 16112 Euclid Ave., Cleveland, Zone 12, consult. engrs. CD 6/6/50, under Cleveland, O.

▲ Texas—RURAL DISTRIBUTION LINES—Deep East Texas Electric Co-operative, San Augustine, 204 mi. transmission lines, some sys. imprvs., San Augustine Co. $1,220,000. REA allot. CD 6/27/52.

Texas—RURAL DISTRIBUTION LINES—Dickens County Electric Co-operative, Spur, rural distr. lines, Dickens Co. $900,000. REA allot.

Tex., Lubbock—GAS LINES, LIGHTING—Kulp & Gibson, Lubbock, natural gas lines, $77,500; lighting, $75,000.

▲ Wash., Longview—PORT FACILITIES—Port of Longview, Longview, bond election November 8, port facilities expans. $1,500,000.

Wisconsin—RURAL DISTRIBUTION LINES—Jackson Electric Co-operative, Black River Falls, 35 mi. rural distr. lines, sys. imprvs., Jackson Co. $261,000. CD 8/2/51.

"...it pays to buy the finest"

"About five years ago a Union Oil Company representative recommended T5X motor oil and UNOBA *multi-purpose* grease for our equipment, and we agreed to try them on certain of our machines.

"After thorough testing of these products in a few pieces of our equipment we were more than gratified with the results. Engine performance improved and oil drain intervals were extended by using T5X. Costly lubrication errors became a thing of the past with *multi-purpose* UNOBA. In fact we've never had a part failure where this lubricant was used.

"We've standardized on Union lubricants for our more than 50 pieces of equipment. We endorse them without reservation to operators of gasoline or diesel-powered heavy-duty equipment that is subject to hard usage. We've found it pays to buy *the finest*."

From everywhere come reports like this one of the American Construction Co., Inc., of Hartford, Conn. There's a Union Oil representative near you. Call him and have him show you how Union Oil Company products can save you time and money... no matter what lubricants you're using now.

Joe Wilkovich, superintendent, and James R. Mancini, vice-president in charge of operations, American Construction Co., excavating contractor for the Connecticut General Insurance Building at Bloomfield, Connecticut

76

UNION OIL COMPANY
OF CALIFORNIA

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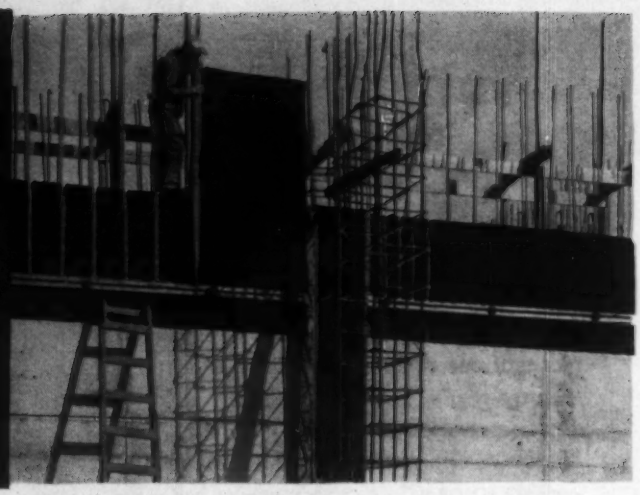
Harborite®

(DENSE OVERLAY ON SOLID-CORE BOAT PLYWOOD)

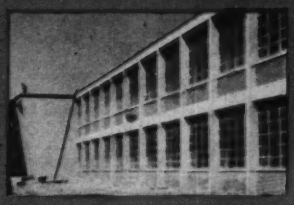
CONCRETE FORM MULTI-USE PANELS



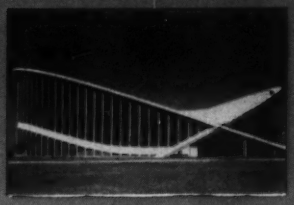
...lowest cost-per-foot-per-use of any concrete form material

...proved in every type of concrete construction

SCHOOL—Pecan Field School at Jacksonville, Florida, built in 1954 by East Coast Construction Company. President C. Bernard reports, "Harborite panels were re-used twenty times on each side...expect another twenty uses. Edges held up exceptionally well under rough usage and the finished concrete had a smoother finish than that obtained with other form materials."

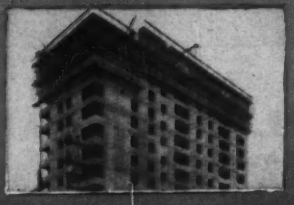


ARENA—Livestock arena at the State Fair Grounds in Raleigh, North Carolina has drawn international acclaim for beauty and design. Harborite concrete form panels were used in construction of this unique structure. Seats 5400 spectators. Erected in 1953 by William Muirhead Construction Company. Architects were Matthew Nowicki and William Henry Dietrick.



OFFICE BUILDING—New headquarters for the Tacoma City Light offices completed in 1954. Roy T. Earley Construction Company used Harborite concrete form panels for entire exterior surface of building...re-used on adjoining shop building. Contractor says "...more than normal number of re-uses, stripping was easy, finish was held to a minimum." Architect was Silas E. Nelson of Tacoma.

APARTMENT—An outstanding new landmark on Seattle's skyline is the 900 University Apartment house. Harborite concrete forms were used exclusively on the exterior of this 22-story building. Only one set of forms was built. Says contractor Louis E. Baldwin, "These forms have been used 22 times each...are in good enough shape to use on another building of similar size. We recommend Harborite to any contractor." Architect, [illegible] W. Morrison.



Eighteen years of use in every type or concrete construction has proved that Harborite produces better jobs at lower cost. Harborite's medium-high density overlay is manufactured specifically for concrete form work. Tough, smooth surface will produce glasslike concrete until literally worn away through use. Re-use factor is exceptionally high—50 being common, 2 to 3 times amount not unusual. Special solid core construction of SUPER-Harbord boat plywood adds extra strength and durability. There is no plywood made that matches this material in all 'round quality.

Lower-than-average initial cost combined with high re-usage means important dollar savings. This, with the superior appearance of the finished concrete job, adds up to features that make Harborite a must for cost-and-quality-conscious contractors.

Look at these Harborite advantages:

- ✓ Designed especially for multi-use concrete forms.
- ✓ Extremely tough, smooth overlay completely hides wood grain, knots and flaws; won't check or split; produces perfect concrete surfaces.
- ✓ Resin-impregnated overlay has great affinity for oils, sealers and lacquers.
- ✓ Will not bleed, run or discolor concrete.
- ✓ Solid core of best plywood made—SUPER-Harbord, the original boat plywood.
- ✓ Lower-than-average initial cost, high re-usage.
- ✓ Oiled and edge-sealed at factory.
- ✓ Available in oversize panels as well as standard 4' x 8' sizes, any thickness.

One of the royal family of plywoods manufactured only by

HARBOR PLYWOOD CORPORATION, ABERDEEN, WASH.

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Bids—Low Bids—Contracts—Second Section

NEW ENGLAND

HEAVY CONSTRUCTION—BA

▲† **Massachusetts**—BA 11/1—U. S. Eng., 111 E. 16 St., New York 3, N. Y., flood control proj:, Unit No. 4, Adams, CIVENG-30-075-56-5, $2,000,000-$2,500,000. Plans deposit $25. CD 10/3.

BUILDINGS—LB & CA

▲ **A. Cefalo & Sons, Inc.**, 42 Bennett St., Lynn, Mass. LB $2,740,000, Senior HIGH SCHOOL, Proj. NH 54-C-2AA, PORTSMOUTH, N. H. City, supt. Schools, Raymond I. Beal, 126 Daniel St., Portsmouth, N. H. Bids Oct. 7. CD 9/13.

▲ **Town**, South Main St., Sharon, Mass., rejected bids Sept. 22, high SCHOOL, Pond St., SHARON, MASS. LB $1,988,151. CD 9/27, under LB.

MIDDLE ATLANTIC

BUILDINGS—BA

▲ **N. Y., Brooklyn**—SCHOOL—BA 11/9—Bd. Educ., Bureau Constr., 42-15 Crescent St., Long Island City, Zone 1, general constr., plumbing, drainage, heating & ventilating, electrical & lighting fixtures for P. S. 58, Smith St. between Carroll St. and First Place, $2,156,000. Plans deposit $20 for general constr., $10 each plg. & drainage, htg. and vent., elec. and lighting fixtures. CD 1/20.

▲† **N. Y., West Point**—RIDING HALL—BA On or About 11/30—U. S. Eng., 111 E. 16 St., New York, Zone 3, conversion of riding hall to academic bldg., bridges at north and south ends of bldg., tunnels, pedestrian tunnel, mechanical work, Eng. 30-075-56-14, $5,000,000-$7,500,000. Plans deposit $100. CD 10/22/54.

HEAVY CONSTRUCTION—LB & CA

▲ **NEW YORK**—Bureau Contracts & Accounts, The Gov. Alfred E. Smith State Office Bldg., Albany,
Del Balso Constr. Corp., 500 Zerega Ave., Bronx 72, N. Y. CA $761,830. est. $750,000. (3 bidders) Cross Bronx Expressway Cont. 1C (Anthony Ave.-Longfellow Ave.) 1.22 mi., FACBE 55-1, Bronx Co. CD 8/31, under LB.

† **Michael Contg. Co., Inc.**, 142-148 19 St., Brooklyn, N. Y. CA $749,070. Special AAA facilities, Cambria, NEW YORK. U. S. Eng., 111 E. 16 St., New York 3, N. Y. CD 9/23, under LB.

▲ **McKiernan-Terry Corp.**, 15 Park Row, New York 7, N. Y. LB $3,177,175. (2 bidders) combination bid for P-111 and P-131; LB $1,698,484. (2 bidders) Contr. P-111, furnish, install 2 movable coal unloading towers for 59 Street Power Plant, Manhattan Boro, NEW YORK, New York City Transit Auth., 370 Jay St., Brooklyn 1, N. Y. Bids Sept. 30. CD 8/29;
Heyl-Patterson, Inc., 120 Broadway, New York 7, N. Y. LB $1,497,965. (2 bidders) Contr. P-131, coal unloading towers at Kent Avenue Power Plant. (New York).

▲ **T & T Contg. Corp.**, 4814 Glenwood Rd., Brooklyn N. Y. CA $2,330,751. est. $2,984,700 (7 bidders) storm water sewer, appurtenances in 122 Ave., 199 St., Linden Blvd., 198 St., 109 Ave., 100 Ave., 122 Ave., 199 St., 198 St., 109 Ave., 199 St., 198 St., 201 St., 122 Ave., 197 St., 198 St., 199 St., Fourth Ward, NEW YORK. President Queens Boro, Queens Boro Hall, 120-55 Queens Blvd., Kew Gardens 24, N. Y. CD 8/19, under LB.

▲ **T & T Contg. Corp.**, 4814 Glenwood Rd., Brooklyn 3, N. Y. LB $2,296,441. sanitary sewer appurtenances, 147 Ave., Brookville Blvd., 243 St., 146 Ave., Edgewood St., Huxley St., 249 St., 241 St., Newhall Ave., Mayda Rd., 145 Ave., 144 Ave., Caney Rd., Caney Lane, Weller Ave., 143 Ave., 142 Ave., 141 Ave., 248 St., 247 St., 148 Ave., Weller Lane, 147 Drive, 147 Rd., 257 St., 259 St., Francis Lewis Blvd., Memphis Ave., 246 St., 250 St., 139 Ave., Hook Creek Blvd., 253 St., 254 St., 255 St., North Conduit Ave., 138 Ave., 137 Rd., 137 Ave., 136 Rd., 136 Ave., 135 Ave., 133 Rd., 244 St., 245 St., NEW YORK. President, Queens Boro, Queens Boro Hall, 120-55 Queens Blvd., Kew Gardens 25, N. Y. Bids Oct. 4. Bids 8/25 and 8/30 rejected. CD 9/26. CD 8/31 and 9/6, under LB.

▲† **Arthur Venneri Co.**, 300 N. Ave. East, Westfield, N. J. CA $2,998,304. hospital, Plattsburgh Air Force Base. PLATTSBURGH, N. Y. U. S. Eng., 111 E. 16 St., New York 3, N. Y. CD 9/1, under LB.

▲ **PENNSYLVANIA**—Pennsylvania Turnpike Comn., 11 N. Fourth St., Harrisburg,
George M. Brewster & Son, Inc., 275 W. Fort Lee Rd., Bogota, N. J. LB $3,562,949. 4.53 mi. (sec. 37K) of northeastern extension in Taylor Borough and city of Scranton, Lackawanna Co. Bids Oct. 11. CD 9/16.

BUILDINGS—LB & CA

▲ **Kingsview Homes, Inc.**, 2 DeKalb Ave., Brooklyn, N. Y. Separate Contracts, $3,000,000. four 15 story and one 14 story APARTMENTS, Myrtle and Willoughby Aves., St. Edward and Ashland Places, BROOKLYN, N. Y. CD 8/25/54.

River Edge Constr. Corp., c/o Michael Glick, archt., 400 E. Fordham Rd., New York 58, N. Y., Owner Builds. $800,000. 20 HOUSES on tract on West 256 St. between Independence and Arlington Aves., NEW YORK, N. Y.

▲ **Turner Constr. Co.**, 420 Lexington Ave., New York 17, N. Y. CA Est. $2,000,000. 3 buildings to house AUDITORIUM, faculty club and executive offices on 12 acre tract on York Ave. between 66 and 67 Sts., NEW YORK, N. Y. Rockefeller Institute of Medical Research, York Ave. and 66 St., New York, N. Y. CD 5/26.

▲ **Providence Estates, Inc.**, c/o Albert Meiniker, archt., 42 Richmond Terrace, Staten Island, N. Y. Owner Builds. $1,400,000. 77 HOUSES on 14 acre tract on Old Town Rd. between Richmond Rd. and Hylan Blvd., OLD TOWN, N. Y.

▲ **George A. Fuller Co.**, 597 Madison Ave. and **The Walsh Constr. Co.**, 122 E. 42 St., New York, N. Y., CA $18,000,000. 1 story 650,000 sq. ft. brick, concerte and steel mfg. PLANT and railroad facilities, at Barrington, CAMDEN, N. J. Owens-Corning Fiberglass Corp., Nicholas Bldg., Toledo, O. and owners agent George B. Robeson & Sons, 622 Cooper St., Camden, N. J. Bechtel Corp., 220 Bush St., San Francisco, Calif. engr.-archt. CD 9/28.

▲ **Barclay Homes**, c/o Robert Scarborough, P.O. Haddonfield, N. J. Separate Contracts. $3,500,000. 239 HOMES, Rte. 73, ERLTON, N. J. Lester H. Weckesser, 19 Montana Ave., Erlton, N. J. archt.

▲ **Cornell Development Co.**, c/o J. Gellman, Edwards and Elvena Aves., Pennsauken, N. J., Separate Contracts. $4,500,000. 300 RESIDENCES, MOORESTOWN, N. J.

▲ **Brookfield Homes, Inc.**, c/o Krugman & DePetro, 1330 Main Ave., Clifton, N. J., Owner Builds. $2,600,000. 215 HOUSES, 100-acre tract, Old York Rd., off Rte. 202, RARITAN, N. J.

▲ **J. C. Breyfogle**, 74 E. Gay St., Columbus, O., CA $1,000,000. SHOPPING CENTER, Lawrence Twp., TRENTON, N. J. Trentfogle Holding Co., 74 E. Gay St., Columbus, O. Molosevich & Trautwein, 3391 N. High St., Columbus, O., archts.

▲ **Standard Engrg. Co.**, 2129 "F" St., N. W. Wash., D. C., LB $1,659,000 (5 bidders) REFRIGERATION PLANT, mech. sys., electrical sys., general constr. in connection with changes and imprvs. at U. S. Capitol Power, Plant, WASH., D. C. Office of the Architect of Capitol, U. S. Capitol, Wash., D. C. Bids Oct. 7. CD 9/15.

▲ **Irwin & Leighton**, 1505 Race St., Phila., Pa., CA $1,000,000. SERVICE bldg. at Hercules Experimental Bldg., WILMINGTON, DEL. Hercules Powder Co., Delaware Trust Bldg., Wilmington, Del. Bids Aug. 26. CD 8/19.

▲ **Magness Constr. Co.**, 405 Phila. Pike, Wilmington, Del., Separate Contracts. $1,500,000. 119 HOMES, Brandywine Heights, WILMINGTON, DEL.

SOUTH

HEAVY CONSTRUCTION—BA

▲† **Fla., Orlando**—BASE FACILITIES—BA On or About 11/18—U. S. Eng., P. O. Box 4970, Jacksonville, Zone 1, base facilities incl. communication bldg., Base ordnance igloo, storage magazine, organizational maintenance shop, basey pyro storage magazine, base arms storage magazine, chapel, educational wing, NCO Club House, A & E Shop, Pinecastle Air Force Base, ENG-08-123-56-26. CD 9/16.

BUILDINGS—BA

▲ **La., New Orleans**—SUPREME COURT—BA 11/15—State Bldg. Auth., State Capitol, Baton Rouge, 2 story, bsmnt., 130x234 ft., steel supreme court, Total est. $5,500,000. Plans deposit $200. August Perez; Goldstein, Parham & Labouisse; Favrot, Reed, Mathes, 402 Nola Bldg., New Orleans, archts. CD 8/6/54.

HEAVY CONSTRUCTION—LB & CA

▲ **KENTUCKY**—Commonwealth of Ky., Dpt. Hys., Frankfort,
Ky.—**Middle West Roads Co.**, 1201 Short St., Louisville, Ky. CA $511,996. bit. conc. Class I surf. on bit. macad. base 1.523 mi., State Fairgrounds roads, SP 56-708, Jefferson Co.;
Ky.—**R. B. Tyler Co.**, 1446 Levering St., Louisville, Ky. CA $890,932. high type surf. 0.564 mi., North-South Expressway, IN 519 (4), SP 56-798, Jefferson Co. CD 10/6, under LB.

BUILDINGS—LB & CA

▲ **R. J. Jones & Sons**, Box 991, Alexandria, La. CA $1,281,704. 2 story, steel, masonry ENGINEERING bldg., Southwestern Louisiana Institute, LAFAYETTE, LA. State Bldg. Auth., State Capitol, Baton Rouge, La. Bids Sept. 13, awarded Oct. 7. CD 9/21, under LB.

▲ **G. E. Bass & Co.**, Box 1033, Jackson, Miss. CA $1,074,033. SCIENCE Building, Louisiana Polytechnic Institute, RUSTON, LA. State Bldg. Auth., State Capitol, Baton Rouge, La. Bids Sept. 27, awarded Oct. 7. CD 10/10, under LB.

MIDDLE WEST

BUILDINGS—BA

▲ **O., New Richmond**—SCHOOL—BA 11/12—Bd. Educ., Market St., elementary school, present school alterations. $1,500,000. Plans deposit $50. Sullivan-Isaacs, Sullivan & Assoc., 1800 Reading Rd., Cincinnati, engr.-archts. Bids 9/23 rejected. CD 8/31

HEAVY CONSTRUCTION—LB & CA

▲† **U. S. Eng.**, Federal Bldg., Pittsburgh, Pa., rejected bids, five Nike sites in Cleveland, OHIO. LB $6,330,000. Will re-advertise. CD 10/7, under LB.

▲† **May Constr. Co., Inc.**, Cape Girardeau, Mo., CA $1,786,180, widening first 3-mi. sect. of Calumet-Sag Channel, CIVENG-11-032-56-5, ILLINOIS. U. S. Eng., 475 Merchandise Mart, Chicago 54, Ill. Bids Oct. 11. CD 9/6.

▲ **Thomas McQueen Co.**, 1313 Circle Dr., Forest Park, Ill., LB $1,387,915 (4 bidders) ramps and pavement, Congress Expressway at Post Office CHICAGO, ILL. City, City Hall Chicago, Ill. Bids Sept. 28.

BUILDINGS—LB & CA

▲ **Brickman Home Builders**, 8236 W. Lawrence Ave., River Grove, Ill. Own Forces. $2,750,000. 100 HOMES, ARLINGTON HEIGHTS, ILL. A. J. Del Bianco, 5501 W. Irving Park Rd., Chicago, archt.

▲ **J. J. Altman & Co.**, 2950 Illinois Ave., East St. Louis, Ill., CA $1,959,670, 3 story, 56x320 ft. and 56x90 ft. brick, steel, rein.-con. HOSPITAL, CENTREVILLE TWP. (East St. Louis, P.O.), ILL. Centreville Twp. Hospital Bd., Francis Touchette, Chmn., City Hall, 4831 Bond Ave., Centreville Twp., East St. Louis, Ill. Bids Sept. 27, awarded Oct. 5. CD 10/3, under LB.

▲ **Witwicki Home Builders, Inc.**, 4930 N. Mango St., Chicago, Ill. Own Forces. $1,100,000. 55 HOMES, near CHICAGO, ILL. A. J. Del Bianco, 5501 Irving Park Rd., Chicago, archt.

▲ **Sumner Sollitt Co.**, 307 N. Michigan Ave., Chicago 1, Ill., CA $12,500,000. raze and replace with 20-story OFFICE BLDG., at Adams and Michigan Ave. CHICAGO, ILL. 200 S. Michigan Ave. Building Corp., c/o Collins Tuttle & Co., 261 Madison Ave., New York 17, N. Y. Awarded Oct. 5. CD 10/10.

▲ **Coath & Goss, Inc.**, 5103 W. Lake St., Chicago, Ill. LB $1,103,082, municipal and SERVICE Bldg., GLENCOE, ILL. Village, Village Hall, Glencoe, Ill. Furst, Maher, McGrew, 1515 Sherman St., Evanston, Ill. archts. CD 11/30/54.

▲ **Moser Lumber Co.**, 319 W. Washington St., Naperville, Ill. Own Forces. $1,800,000. 90 HOUSES, NAPERVILLE, ILL. Harry J. Quinn, 8046 S. Western St., Chicago, Ill., archt.

WEST OF MISSISSIPPI

HEAVY CONSTRUCTION—BA

▲ **Tex., Galveston**—BA 11/4—City, H. Y. Cartwright, Jr. mayor, City Hall, Phase No. 2, draw bridge spans on Pelican Island Bridge Proj. to connect Galveston Island with Pelican Island. $2,000,000. Plans deposit $25. Parsons, Brinckerhoff, Hall & Macdonald, 636 Bankers Mortgage Bldg., Houston, engrs. CD 12/9/54.

HEAVY CONSTRUCTION—LB & CA

▲ **Cunningham Bros.**, 359 E. Grand Ave., Beloit, Wis. CA $1,417,729, iron removal and hardness reduction plant, DUBUQUE, IOWA. City, City Hall, Dubuque, Iowa. Bids Sept. 21. CD 10/12, under LB.

† **H. S. Holtze Constr. Co.**, 2124 4th St., Sioux City, Iowa, LB $713,545, 55 housing units, Sioux City Air Force Base. SIOUX CITY, IOWA. Purch. & Contrg. Office, Sioux City Air Force Base, Sioux City, Iowa. Bids Sept. 22. CD 8/26.

▲† **U. S. Eng.**, 1709 Jackson St., Omaha, Neb., rejected bids, central heating plant, high temperature hot water heating sys., Minot Air Force Base, Inv. 25-066-56-3. LB $1,343,950. MINOT, N. D. CD 9/29, under LB.

▲† **Nolan Bros. Inc.**, Box 9157, Fort Worth, Tex., CA $1,495,140, apron, parking, operational; pad, heavy; test stand, Jet Engine, Clinton-Sherman Air Force Base, NOY 88922, Spec. 47838. CLINTON, OKLA. Office in Charge of Constr., 8th Naval Dist., Bldg. 18, U. S. Naval Station, New Orleans (Algiers), La. Bids Sept. 27, awarded Sept. 30. CD 10/6, under LB.

▲ **H. B. Zachry Co.**, P. O. Box 2570, San Antonio, Tex. LB $6,720,030, Wesley E. Seale Dam Proj. on Nueces River, 5 mi. south of Mathis, incl. two Ambursen type rein.-con. slab-and-buttress spillways 60 ft. high, approx. 1,346 ft. and 1,560 ft. long respectively; three sects. of rolled fill dam approx. 2,200 ft., 500 ft. and 400 ft. long respectively; outlet structure and appurtenant works; field office bldg. CORPUS CHRISTI, TEX. Lower Nueces River Water Supply Dist., 211 Weber Bldg., Corpus Christi, Tex. Bids Oct. 11. CD 8/12.

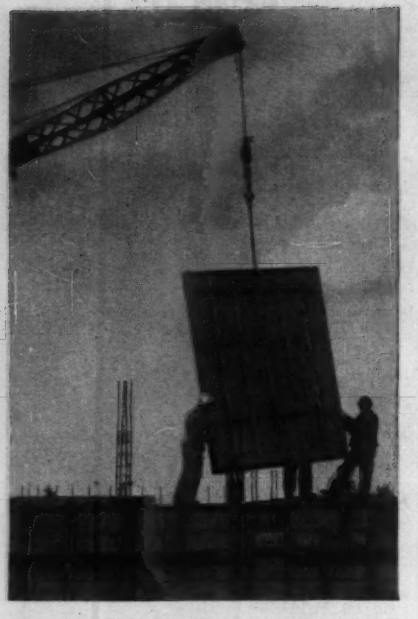
BUILDINGS—LB & CA

▲ **MacDonald Engineering Co.**, 22 W. Madison St., Chicago, Ill. CA Est. $1,000,000. finish grinding PLANT unit with auxiliaries and appurtenances, LEMAY, (ST. LOUIS 23 P. O.), MO. Alpha Portland Cement Co., J. F. Magee, pres., Easton, Pa. MacDonald Eng. Co., 22 W. Madison St., Chicago, Ill., engr. CD 10/20/54, under St. Louis County, Mo.

▲ **Centex Constr. Co.**, 4606 Greenville St., Dallas, Tex. Owner Builds. $395,000, 40 DWELLINGS; $361,750, 28 dwellings; $371,000, 32 dwellings, Grand total $1,127,750, DALLAS, TEX. CD 5/4.

▲ **The Cato Corp.**, c/o C. Grady Cates, Jr., 9747 Harry Hines Blvd., Dallas, Tex., Own Forces. $385,000, (M) 35 DWELLINGS; $355,050, (N) 26 dwellings; $345,175 (O) 24 dwellings, Grand total $1,085,225. FARMERS BRANCH, TEX. CD 2/24.

▲ **Henry C. Beck Co.**, 1st. Natl. Bank Bldg., Dallas, Tex. CA $2,250,000. PLANT at Euless, FORT WORTH, TEX. Menasco Mfg. Co., 805 S. San Fernando Blvd., Burbank, Calif. CD 9/30.



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▲ **Jim West Building Co.**, 226 Winkler St., Houston, Tex. CA $365,075, 40 DWELLINGS. CA $376,000, 45 dwellings; CA $350,000, 35 dwellings, Grand total $1,091,075, HOUSTON, TEX. Jim West & Assocs., 226 Winkler St., Houston, Tex. CD 5/9.

▲ **Built-Right Homes**, 415 S. Haskell St., Dallas, Tex. Own Forces. $375,000, 50 DWELLINGS; $368,150, 48 dwellings; $358,200, 42 dwellings in Section 5. Grand total $1,101,350. HOUSTON, TEX. CD 6/22.

▲ **Fish Eng. Co.**, M & M Bldg., Houston, Tex., CA $1,500,000. gas PLANT expans. ODESSA, Tex. Texas Gulf Producing Co., Midland Natl. Bank Bldg., Midland, Tex. CD 10/12.

▲ **Farnsworth & Chambers Co. Inc.** 3018 Leeland St., Houston, Tex., CA Total Est. $15,000,000. polyethylene plastic PLANT on Houston Ship Channel between Pasadena and Sweeny, PASADENA, TEX. Phillips Chemical Co., City Natl. Bank Bldg., Houston, Tex. CD 5/19.

▲ **G. W. Mitchell**, 2002 N. St. Mary's St., San Antonio, Tex., LB $474,710, Proj. 1, girls' DORMITORY No. 1; LB $451,790, Proj. 2, girls' dormitory No. 2, SAN MARCOS, TEX. Southwest Texas State Teachers College, San Marcos, Tex. and Bd. of Regents, State Teachers College of Texas, Tribune Bldg., Austin, Tex. Bids Oct. 5. CD 9/21.

▲ **Robert H. Lupton, Builder**, 4207 Byron St., Houston, Tex., CA $366,350, 33 DWELLINGS; CA $410,000, 41 dwellings; CA $385,150, 39 dwellings, Grand total $1,161,500. SPRING BRANCH, TEX. Robert H. Lupton, 4207 Byron St., Houston, Tex. CD 5/6.

▲ **Stone & Webster Engrg.** Corp., Mellie Esperson Bldg., Houston, Tex., CA Est. $10,000,000. ethylene PLANT, SWEENY, TEX. Phillips Chemical Co., City Natl. Bank Bldg., Houston, Tex. CD 5/19.

FAR WEST

BUILDINGS—BA

▲ **Calif., Riverside**—HOSPITAL—BD 11/9—Bd. Suprvs., Riverside Co., Court House, 3 story 51,532 sq. ft. rein.-con. hospital, Riverside Community Hospital. $1,000,000. Plans deposit $25. J. Dewey Harnish, 222 E. "B" St., Ontario, archt. CD 10/15/51.

▲ **Calif., Daly City**—SCHOOL—BA 11/14—Jefferson Union High School Dist., Daly City, Westmoor School, $2,200,000. Plans deposit $50. Mario Ciampi, 425 Bush St., San Francisco, archt. Isadore Thompson, 583 Market St., San Francisco, engr. CD 10/8/54.

HEAVY CONSTRUCTION—LB & CA

▲ **Westinghouse Electric Corp.**, P.O. Box 868, Pittsburgh 30, Pa. CA, eight generators for Brownlee and Oxbow power projects on Snake River;
General Electric Co., River Rd., Schenectady 5, N. Y. CA, transformers and switching equipment for Snake River Proj. Est. $13,620,000. IDAHO-OREGON. Idaho Power Co., 1220 Idaho St., Boise, Idaho. CD 8/8.

▲ **American Telephone & Telegraph Co.**, 195 Broadway, New York, N. Y. Force Account. $14,000,000. underwater telephone cable sys. 800 nautical mi. from Port Angeles, Wash. to Ketchikan, Alaska. WASHINGTON-ALASKA. CD 7/23/54.

▲ **Manson Constr. & Engrg. Co.**, 821 Alaskan Way, Seattle, Wash., CA $1,937,480, est. $2,584,752, four main piers, Willamette River Bridge at Morrison St., PORTLAND, ORE. Multnomah Co. Comrs., Court House, Portland, Ore. Bids Sept. 29, awarded Oct. 6. CD 10/3, under LB.

▲ **CALIFORNIA**—San Francisco Bay Toll Crossing, 2054 University Ave., Berkeley,
Erickson, Phillips & Weisberg, 350 Market St., Concord, Calif., CA, $1,133,350. paving lower deck of Richmond-San Rafael Bridge, install scaffold rail and hangers, etc., Contra Costa and Marin Counties. Bids Sept. 27, awarded Oct. 6. CD 10/3, under LB.

▲ **CALIFORNIA**—State Div. Hys., 1120 N. St., Sacramento,
Gordon H. Ball, 300 Camille Ave., Danville, Calif., CA $3,052,569, grading, surf. 2.6 mi. of Lafayette Bypass on Sign Rte. 24, six rein.-con. bridges, ramps, connections, Contra Costa Co. Bids Sept. 28, awarded Oct. 6. CD 9/30 under LB.

▲† **Winston Bros.**, 1532 S. California Ave., Monrovia, Calif., LB $2,491,000, Los Angeles River Imprvt. Corbin Ave. to Reseda Blvd., River Mile 48.92 to 47.12, Los Angeles. CALIFORNIA. U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif. Bids Oct. 11. CD 9/20.

BUILDINGS—LB & CA

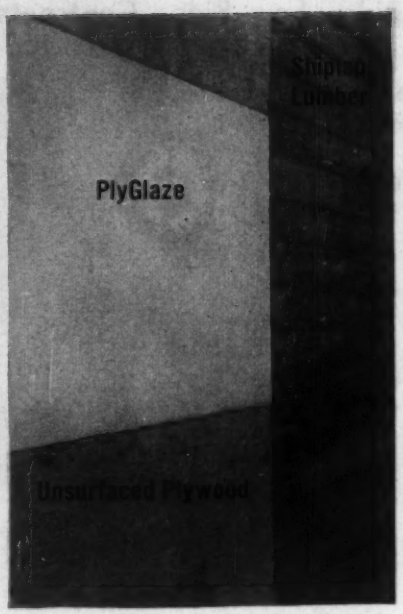
▲ **Williams & Burrows**, 500 Harbor Blvd., Belmont, Calif. LB $1,999,980, seven girls' DORMITORIES, PALO ALTO, CALIF. Bd. Regents of Stanford University, Palo Alto, Calif. Bids Oct. 6. CD 9/21.

▲ **James I. Barnes Constr. Co.**, 940 Spring St., Redwood City, Calif., LB $3,217,000 (4 bidders) civic AUDITORIUM, SANTA MONICA, CALIF. City, City Hall, Santa Monica, Calif. Bids Oct. 11. CD 9/30.

▲ **George Roek Constr. Co.**, P.O. Box 783, Stockton, Calif., LB $2,490,000, Lever Village Junior HIGH SCHOOL and East Side Junior High School, each 112,-964 sq. ft., STOCKTON, CALIF. Stockton City Unified School Dist., 304 N. San Joaquin St., Stockton, Calif. Bids Oct. 7. CD 9/16.

▲ **Heyman Brothers**, 5150 Geary Bldg., San Francisco, Calif. Own Forces. $2,500,000, 136 HOMES and shopping center in Laurom Park, SUNNYVALE, CALIF.

R. A. Watt Constr. Co., 15704 S. McNaff Ave., Bellflower, Calif. CA $618,000. 60 frame, stucco DWELLINGS in tract 21645, TORRANCE, CALIF. Casimer Gardens, 15704 S. McNaff Ave., Bellflower, Calif.



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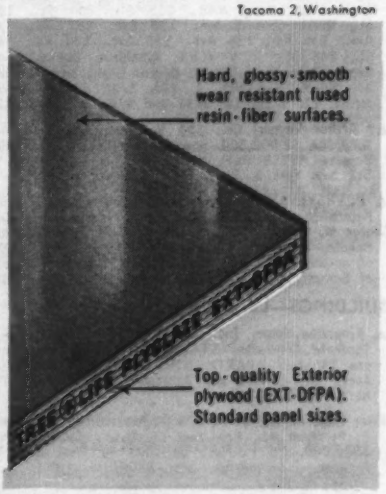
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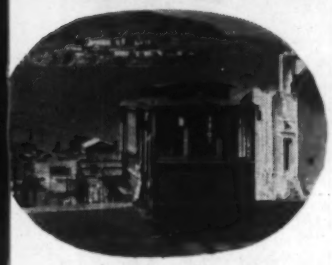

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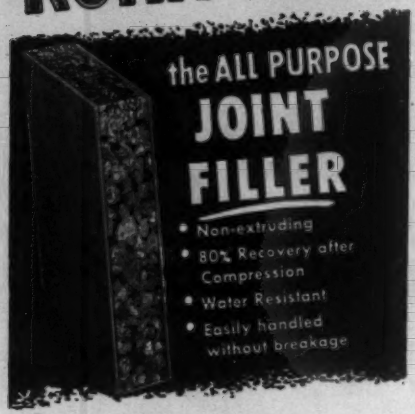

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UNIT PRICES

Ohio Turnpike Service Plazas Include Landscaping

Contracts totalling $230,000 to $280,000 each for construction of service facility plazas for Ohio Turnpike include access roads to water treatment and sewage disposal plants and to underground fuel-storage areas, turnarounds, curbs and sidewalks, fine grading and paving of acceleration and deceleration lanes, gardens, playgrounds and picnic areas. Each dual service plaza serves both sides of the turnpike.

Consulting engineers acting as authorized representatives of T. J. Kauer, Chief Engineer of Ohio Turnpike Commission, are: Howard, Needles, Tammen & Bergendorf, Ravenna, Ohio; Charles E. DeLeuw, Amherst, Ohio; Brown & Blauvelt, Fremont, Ohio; Vogt, Ivers, Seaman & Associates, Delta, Ohio; and Consoer-Townsend & Associates, West Unity, Ohio.

Contractors had to complete their work on or before September 15, except for paved shoulder and seeding work and acceleration and deceleration lanes at Plaza 4 in Lorain County which had to be completed August 1. All projects including topsoil, grading and final cleanup had to be finished by September 30, ready for the official opening October 1.

Unit prices follow for five of the eight plazas.

Contractor		Frank Mashuda Co. Pittsburgh, Pa.		A. J. Baltes, Inc. Norwalk, Ohio		Fenton Constr. Co. Ashland, Ohio		Launder & Son & Pierce Constr. Co. Swanton, Ohio		Northwest & Shelly Bryan, Ohio	
Contract price		$242,048		$284,775		$245,255		$230,648		$237,282	
Plaza No & County		2 Portage		4 Lorain		5 Sandusky		7 Lucas		8 Williams	
Roadway											
Bids: 6-21-55 Item	Unit	Quantity	1C Unit Price	Quantity	1C Unit Price	Quantity	1C Unit Price	Quantity	1C Unit Price	Quantity	1C Unit Price
Topsoil, 2", s & p	sy	21,000	$0.20	37,100	$0.20			32,200	$0.14		
f & p	sy					31,800	$0.20			33,000	$0.07
4" s & p	sy	2,000	0.30	2,900	0.30			2,800	0.25		
f & p	sy					3,000	0.29			2,300	0.14
Grading misc	ls		15,000		35,000		27,500		17,500		8,358
Seeding, type A	sy	96,000	0.12	55,000	0.30	63,198	0.16	68,916	0.09	96,000	0.09
Lime, hydr agric	t	40	25.00	24	40.00			30	50.00		
Fertil comm 10-20-10	t	8	100.00	5	150.00	6	140.00	6	100.00	8	130.00
Final cleanup	ls		10,000		1,000		4,000		5,000		1,500
*s stockpiled *p place		*f furnish									
Drainage											
Excav for struct	cy	35	6.00	170*	5.00	188	3.50				
Conc, Cl C for struct	cy	2	100.00	40	85.00			1	100.00		
Steel, reinf	lb	115	0.30	1,800	0.20						
Roadway drains	ea	14	60.00			12	60.00				
Pipe, cast-iron, 6"	lf	1,000	10.00			643	4.75	75	8.00‡		
RC Culv pipe, 18"	lf	44	6.00								
** dry *‡ Extra Strength											
Pavement											
Embank mat, classif	cy	10,000	4.00	12,000	4.50	12,380	4.60	10,828	5.45	11,500	5.95
Compact aggr base cse	cy					248	5.00	1,304	8.50		
Bit prime ct, incl sand cover, MC-0 or MC-1	gal	28,000	0.35	28,500	0.30	30,500	0.30	29,792	0.35	29,000	0.15
Bit macad surf cse 3"	sy	56,000	1.50	57,000	1.35	60,920	1.32	58,384	1.24	58,000	1.58
Asph conc surf crse, type A	cy	180	27.50	200	27.00	176	27.00	90	23.75	175	22.00
Pave, RC, 7"	sy	3,160	10.00	2,880	7.50	3,192	7.25	3,476	7.50	3,150	9.90
10"	sy			5,500	8.25						
Conc walk, 4"	sf	3,300	0.70	2,950	0.60	2,800	0.60	2,640	0.65	3,300	0.75
Curb, type A	lf	2,420	4.00	2,540*	3.00						
type 2	lf	550	4.00	1,300	3.00	3,250†	3.50	3,272	2.60	2,500	4.00
type 3 modif	lf	710	4.00	800‡	3.00	720	3.50	1,000	2.50	750	4.25
** 1' 7½"x8" *† typical		*‡ 1' 5½"x8"									

Wage rate for workers and operating engineers, highway and heavy construction include:

Classification	per hr	per hr	per hr	per hr	per hr
Air and machine driven tool operators	$2.14	$2.43	$2.10	$2.38	$2.00
Construction laborers	2.07	2.30	1.97	2.25	1.87
Roller operators, brick, grade and macadam	2.55	2.775	2.55	2.55	2.55

I-Beam Bridge, N. Car.

Contract for this 962-ft bridge over the Tar River on a Pitt County road near Bells Cross Roads went to Bowers Const. Co., Raleigh, N. C., on the low bid of $185,802, 16.5% below the high, 2% below the second bid.

Work is for the North Carolina State Highway and Public Work Commission, William H. Rogers, Jr., state highway engineer, Raleigh.

This is a 23-span bridge, 19 of 37½ ft and four of 62½ ft. Horizontal clearance at mean low level is 40 ft and vertical clearance is 32.2 ft.

Eight bidders include:

1C	Bowers Constr. Co., Raleigh, N. C.	$185,802
2	Blythe Bros. Co., Charlotte, N. C.	$189,919
8	Sanford Const. Co., Sanford, N. C.	$222,124

Bids: 4-26-55 Items	Unit	Quantity	Unit Prices 1C	2
Excavation, wet	cy	380	$20.00	$20.00
Removal of exist str	ls	1	8,000	4,000
Concrete, Cl A	cy	1,157	55.00	55.00
Steel, reinforcing	lb	275,950	0.1075	0.10
structural	ls	493,500*	54,000	58,500
Piles, precast conc 20"	lf	3,207	6.00	7.00
timber, test, unloaded	ea	3	500.00	300.00
timber, untreated	lf	1,440	1.50	2.25

* Aprox Completion time: 220 working days

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Petter 5 HP aircooled diesel driving well pump. (A Shell photograph)

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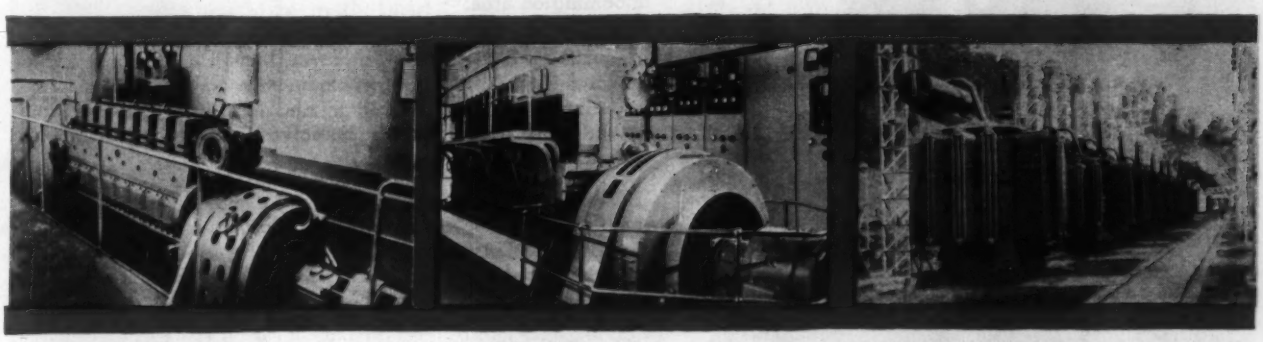

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BRAZIL
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A member of the Brush Group
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For the last 30 years, Delmar Rowe has been building roads. And for the last seven years, Cities Service Lubricants have paved his way to greater profits. The firm is Rowe Construction Co., Bloomington, Illinois...and since 1925, it has not only built countless roads, but has also reclaimed land, supplied gravel, and constructed sewers and water mains throughout the Bloomington area.

Rowe's choice of Cities Service Lubricants was no hit-or-miss proposition. "At that time," he says, "I'd had 23 years observing down-to-earth lubrication problems with construction machinery...and I was determined to find lubricants that gave the down-to-earth performance to solve these problems. Cities Service supplied the answer."

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Delmar Rowe is but one more construction man who's found Cities Service Lubrication the road to increased efficiency, lowered costs. Why not learn what it can do for you? Contact your nearest Cities Service representative or write: Cities Service Oil Company, Sixty Wall Tower, New York 5, N. Y.

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One of Rowe's 19 Dump Trucks fills up with Cities Service Gasolene...a powerful treat for a hungry engine. Rowe also uses Cities Service Diesel Fuels, C-300 Motor Oil, and Trojan Greases.

Bond Market Change Gives Toll Roads Better Chance

Investors' reception of next week's huge Illinois issue will be a real test of this better climate for financing

J. P. Chamberlain
Associate Editor

There's been a change during the past few weeks in the temper of the municipal bond market, where public works are usually financed. That means a revival of interest in toll road projects.

Underwriters are getting set to make a bid next week on the offering for the long-delayed $415-million Illinois toll road, which would be the biggest turnpike yet. And last week bankers announced that the Oklahoma Turnpike Authority would be in the market around February for $65 million to finance the 98-mile "northern" turnpike, to connect the existing Turner Turnpike with the Kansas Turnpike, now under construction.

• **Test**—The interest rate which underwriters bid on the Illinois toll road project and the way it sells to investors will be a very important test of how far the market has changed. Like many other fields of human activity, the bond market has been affected by the President's illness. Exuberance about the future of the business boom has been reduced, because the business policy of the next Administration is less certain. It begins to seem quite possible that the Federal reserve board will ease up on its money policy. The stock market has been having trouble. All three of these things are good for bond prices. In other words, they mean lower borrowing costs.

• **Two go over**—That's why, last week, two bond issues went over well that had previously been postponed because borrowers were dissatisfied with the price bid by underwriters. First of these was the $40-million Cook County expressway bonds, which sold at a net interest cost of about 2.56%. Back in August, county officials had previously rejected a bid of 2.69%. (Aug. 25, p. 77).

The other issue, a $50-million block of long-term New York Thruway bonds, went to underwriters at a net interest cost of 2.51%. A $125-million issue of these bonds had been postponed in July, because underwriters wanted a net interest cost of 2.9%. Since then, the Thruway Authority has borrowed $50 million in bond-anticipation notes due next June.

There were probably other reasons than the shift in business confidence why these bond issues did so much better now than last summer. For instance, Cook County has done an intensive job of selling prospective investors on the security behind its bonds, which are not specifically backed by the state.

• **Now what?**—This doesn't mean, however, that the huge Illinois toll issue will do as well. Around Wall Street this week, observers were saying that the bid price might well figure out to a net interest cost of 3.75%—a whacking charge for a tax-exempt issue. They point out that engineers' revenue estimates are based partly on completion of the Cook County expressway system by the time the toll roads open in 1960. Financing of the expressway system started last week.

• **"Pre-sale book"**—Right now, underwriters are feverishly engaged in lining up a "pre-sale book" of investors who will promise to buy the bonds from them at certain prices. Only if a substantial part of the $415-million issue is thus spoken for in advance will underwriters take the risk on such a huge offering. The search will be intensive. The underwriting group is made up of 564 firms, headed by Glore, Forgan & Co., and Halsey, Stuart & Co., Inc., both of Chicago.

One way of handling the issue might be to finance only the Tri-State route, an 80-mile belt highway around Chicago from Indiana to the Wisconsin border. There are two other routes in the project: the Northern route, an 88-mile pike from Chicago northwest to South Beloit on the Wisconsin line; and a 25-mile stretch out to Aurora. This last is the first segment of a toll project that would eventually go across Illinois to a point near Rock Island.

Toll Officials Find Road Bids Rising

Contractors' bids on turnpikes now under construction have shown a tendency in recent months to rise closer to engineers' estimates. That's the word from the toll road officials who participated in a panel discussion last week in Atlantic City at the annual meeting of the American Bridge, Tunnel, and Turnpike Association.

According to David E. Watson, a member of the Pennsylvania Turnpike Commission, bids on the Northeastern Extension have been rising in the past few months. "The first contract we let on this section were way under estimates," Watson said. "But lately they have been climbing. And last week we had a winning bid which was right on the estimate." Albert J. Wedeking, executive director of the Indiana Toll Road Commission, confirmed that the same process was taking place on his pike, which is under construction.

• **Authorities vs local officials**—Turnpike authorities don't pay enough attention to local communities in planning route location, Hugh R. Pomeroy, director of the Westchester County (N. Y.) Planning Department, told the meeting. He suggested that if the authorities were legally compelled to review their plans with local officials, local problems would be simplified in return. Pomeroy suggested that local communities pledge their taxing power as additional security for the toll bonds, thus lowering interest costs.

Pomeroy also suggested that turnpike authorities be given power to recapture at least part of the increase in market value of real estate along their routes. This would reduce costs of land acquisition, he pointed out.

• **Pike dreams**—Sam Brown, a partner of Cloverdale & Colpitts, told the toll operators that a Maine-to-Florida pike is many years away. He emphasized that the "meat and potatoes" of turnpike revenue is short-haul traffic, and that sufficient traffic does not exist now over many segments of a Maine-to-Florida route.

"For instance," said Brown, "even on the 35-mile Richmond-Petersburg Turnpike, we estimate that only

(Continued on page 161)

THE LONGER LOOK:

Sustained high activity of construction widens the gap between prices of building materials and other prices

Wholesale prices of building materials have been rising sharply since mid-1954. In 15 months, the index of building materials prices compiled by the U. S. Bureau of Labor Statistics has gone up nearly 8½%, while wholesale prices generally rose only 1½% and consumer prices were virtually unchanged.

This widened still further a gap that began to open up more than five years ago between prices generally and prices for building materials. Based on the 1947-49 average as 100, the BLS wholesale price index of building materials reached 128.4 in September. For all commodities the wholesale price index was 111.6, meaning that building material prices have risen about 2½ times as fast as wholesale prices generally since the late 1940's.

• **General price stability**—The apparent stability of prices generally—both wholesale and retail—over the past three years is actually the result of pulling in opposite directions by the various individual prices that go into the averages. Prices for farm products, for instance, have been sliding almost steadily since the spring of 1951, the drop since then being 25%. On the other hand, industrial prices (commodities other than farm products and foods) have been rising slowly since mid-1952.

In retail prices the same sort of spread has developed. The BLS consumer price index in August, the latest date available, was 114.8 (1947-49 = 100). But rents, tightly controlled during the war years, are up an average of over 30% since the late 1940's, and transportation and medical care prices are up over 25%. Price increases below the average have been recorded for food, apparel, house furnishings, gas and electricity, and reading and recreation.

• **Steel up most**—Where have the big price increases come in building materials? With few exceptions, practically everything that goes into the construction process or is normally installed during construction has risen more than prices generally. Only prices for paint materials are lower than in 1947-49. Among the few prices up less than 10% are hardwood, plywood, insulation materials and water heaters.

The biggest rise since 1947-49 is for structural shapes, up 57.5%. Prices for metal sash, structural clay products, finish hardware and window glass are all about 40% higher. Lumber and millwork—which carry heavy weights in the BLS index—cement and plumbing equipment have shown price rises near the 28.4% average for all building materials.

In the recent price spurt the top increase is for building (electric) wire, which shot up 43% in the 12 months from June 1954 to June 1955. However, in June 1954 building wire was priced 17% under its 1947-49 average. The rise since then can be laid directly to a world-wide, largely speculative, increase in copper prices.

• **Construction boom responsible**—The basic reason for the widening gap between prices for building materials and prices generally has been the sustained high activity of the construction industry. This has put pressure on the capacity of suppliers to turn out lumber, cement and structural steel, to mention only a few important items, which has resulted in local shortages and the bidding up of prices.

The price increases, furthermore, sharp rise that began in mid-1954. Building material prices rose 5.3% in the first half of 1950, when the construction industry was getting off to its record homebuilding year, and another 9% in the second half of 1950 during the early part of the Korean emergency. Price decontrol and heavy private construction activity brought a smaller spurt in material prices during the first half of 1953.

There have been brief stretches when building material prices dropped slightly, mostly lumber prices. This happened in 1951, as a reaction to excessive price speculation, and for a year after mid-1953 when the surge in building activity flagged. But these lapses have been too brief, and the volume of construction has remained too high, for the strong upward trend in building material prices to be halted.

• **Price outlook**—There is not much prospect of a reversal in the price climb. It has begun to extend into industrial prices generally and will soon show up in higher price tags on many consumer items. The principal reason is this year's round of wage increases, running 15 cents an hour and higher in many basic industries. During 1953 and 1954 most manufacturing industries absorbed the modest wage increases of those years without raising prices. Productivity gains were sufficient in some cases. Tax relief, particularly the expiration of the excess profits tax, also helped. And high inventories during the moderate business recession simply made it impossible in many industries to pass on cost increases.

With business booming, the situation is now different. The big increases in labor cost can be passed on to consumers. And wages are sure to go up again next year, with automatic boosts already provided in some contracts and the important steel labor contract expiring in the summer. These cost increases, if passed on to consumers are firmly built into the price lists of manufactured products.

Any dampening of the price climb in building materials would have to come from such items as lumber, where prices are more sensitive to current demand. This, in turn, would require a slackening in demand for construction, which is possible for the homebuilding sector but still highly unlikely for construction as a whole.

The outlook in short, then, is for a continued trend of higher prices for building materials. But the rise in industrial prices means that the construction industry will not be alone in feeling the squeeze.

What's been happening to prices?

BLS indexes, 1947–49 = 100

	Consumer	Wholesale	Building Materials
1947-49	100	100	100
1950	102.8	103.1	109.5
1951	111.0	114.8	119.6
1952	113.5	111.6	118.2
1953	114.4	110.1	119.9
1954 (Year)	114.8	110.3	120.2
Jan.	115.2	110.9	119.6
Feb.	115.0	110.5	119.2
Mar.	114.8	110.5	119.3
Apr.	114.6	110.0	119.0
May	115.0	110.9	118.6
June	115.1	110.0	118.5
July	115.2	110.4	120.5
Aug.	115.0	110.5	120.8
Sept.	114.7	110.0	121.3
Oct.	114.5	109.7	121.7
Nov.	114.6	110.0	121.9
Dec.	114.3	109.5	122.0
1955	.....	.....	.....
Jan.	114.3	110.1	122.1
Feb.	114.3	110.4	122.5
Mar.	114.3	110.0	122.8
Apr.	114.2	110.5	123.4
May	114.2	109.9	124.1
June	114.4	110.3	124.1
July	114.7	110.5	125.7
Aug.	114.8	110.9	127.4
Sept.	.....	111.6p	128.4p
Change since June 1954	−0.3%	+1.5%	+8.4%

p preliminary.

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C.P.G.—means cost per gallon and water costs are an all important item to city — farm or industry.

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Le Roi Tractair provides low-cost air to help dig 30′-deep cut in hard rock

On this job in Arizona, the mobility of Tractair really paid off. It allowed the contractor to make this 30-ft.-deep drainage cut at the same time he was working on the main part of his contract.

Because Tractair is self-propelled, with a low center of gravity, it travelled over this rocky terrain with ease. There was no tying up of trucks and men to move compressed air and tools to the spot. Tractair, with its 125 cfm capacity, took care of the whole operation. And the savings to the contractor were substantial.

The versatility of Tractair, since it is a combination 42-hp wheel tractor and 125-cfm compressor, can save you money, too. You can use it for drilling, tamping, driving form pins, breaking pavement, and a host of "odds and ends" jobs. Write for complete details. T-34

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. . . Road Bids

Continued from page 157

13% of the trips will be full-length, creating 32% of the revenue. The average trip will be 10-11 miles. On the 32-mile Dallas-Fort Worth toll road, we estimate only about 4% of the trips start and end outside of the two counties through which the road runs. On the much longer Jersey Turnpike (118 miles) only 15.3% of the trips go all the way between the southern end and the four interchanges in New York metropolitan area. The average trip there is about 38 miles, and has been dropping off steadily since the turnpike was opened."

• **Short-haul pattern**—Brown pointed out what he considers to be one feasible pattern for a toll road: a city of from 250,000 to 500,000 population, with another one about 50 miles away. A toll road between them, he feels, would generate enough traffic to pay for itself.

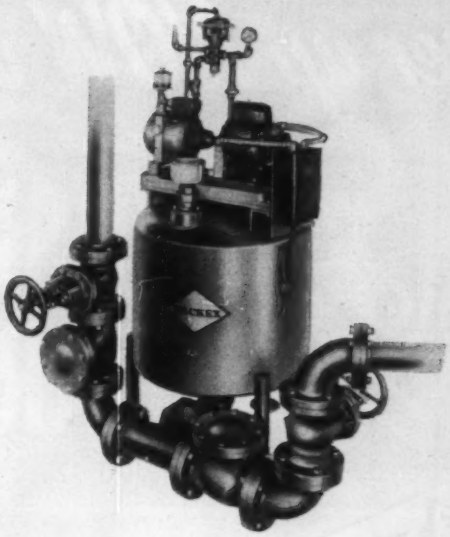
Brown believes that within three to five years other segments of the route between the southern end of the Richmond-Petersburg Turnpike and the Florida line may become feasible for toll roads. Within Florida, a turnpike from end of Ft. Pierce-Hollywood toll road to Florida line seems feasible now, he said.

Syracuse Area Needs Steel Mill, N. Y. State Agency Says

The Syracuse metropolitan area needs an integrated steel mill, producing steel straight through from iron ore to the finished product. That's the finding of a survey just published by the New York State Department of Commerce.

According to the Commissioner Edward Dickinson, the area now is getting most of its steel from Pittsburgh, Buffalo, and Warren, Ohio. Steel users in the area wish they could have a closer source of supply. Dickinson argues that a steel mill near Syracuse would find a big market in supplying the demands of this growing industrial complex, which he believes will be stimulated by the Thruway and the future promise of St. Lawrence power. A mill there, he feels, could also compete on favorable terms for the markets of northern and eastern New York and for much of the New England market.

Dickinson points out that completion of the St. Lawrence Seaway will



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Dept. E, Scranton 2, Penna.

make it possible to ship ore by water from Labrador and the Adirondacks, perhaps more cheaply than from the Mesabi ore fields. He also notes that plenty of coal is already being shipped into the area, and asserts that this proves it could be shipped in economically to make steel.

Fabricator Sues Nine Steel Companies for Trade Restraint

An independent Tucson, Ariz., steel fabricator has filed suit for more than $4 million against nine major steel companies, charging that they operate in restraint of trade.

Complaint was filed in federal district court in San Francisco (where all defendants do business) against United States Steel Corp., Bethlehem Pacific Coast Steel Corp., Bethlehem Steel Co., Jones & Laughlin Steel Corp., National Steel Corp., Republic Steel Corp., Armco Steel Corp., Youngstown Sheet & Tube Co. and Inland Steel Co.

The plaintiff, Austad Steel & Construction Co., asks treble damages amounting to $4,187,133.

Complaint charges that the defendants have "created artificial conditions of shortage by syphoning business off to their own divisions, warehouses and subsidiaries." It also alleges that defendants "have parceled the country out among themselves so certain ones only do business in certain areas . . ." and thus have "restrained and limited competition in the western U. S."

Accusing the defendants of "continuous oppressive conduct," the plaintiff charges that they discriminate against independent fabricators in favor of their own subsidiaries.

Business Briefs . . .

• **Lumber production** for the first eight months of this year was 26.1 billion bd ft—10% greater than in the same 1954 period.

• **Goodyear** Tire & Rubber Co. will build a $7.5-million tire curing addition to its Los Angeles plant. The new addition is scheduled to be finished in about a year.

• **University of Michigan** plans a five-year capital program of $111 million, including about $12.5 million for hospital facilities.

• **Navy jet air base,** to cost $5 million, is planned near Wadworth in Medina County, Ohio, about 30 miles west of Akron. It will also be used by the Air Force.

Wherever you lay concrete, cure it under a blanket of VISQUEEN film . . . get better, longer-lasting concrete.

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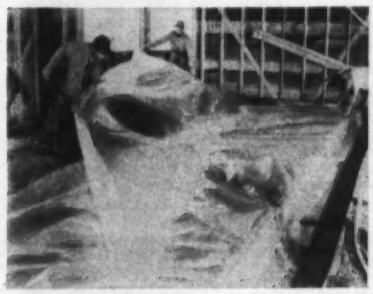
Close openings with VISQUEEN film. Work in warm comfort and protect interiors during cold or stormy weather

VISQUEEN film is best permanent moisture barrier under concrete slabs or floors. Wide widths and light weight mean low laying costs.



Cover bulldozers, tractors, scrapers. Leave outdoors in any weather. Save thousands every winter on your equipment storage costs.

Now you can cure concrete better at much less labor cost. Use VISQUEEN film as a curing blanket. Widths to 32 feet. Any reasonable length. Light, easily handled VISQUEEN is quickly placed over green cement without marring the fresh surface. VISQUEEN locks in the moisture. No need to wet down during cure. VISQUEEN is tough, won't puncture easily—can be used over and over. 1000 sq. ft. of 4 mil VISQUEEN weighs less than 20 lbs.

Investigate the money-saving possibilities inherent in this inexpensive, super-quality film.

Now, you can get VISQUEEN in widths to 32 feet.

Important! *VISQUEEN film is all polyethylene, but not all polyethylene is VISQUEEN. Only VISQUEEN has the benefit of research and resources of the VISKING Corporation.*

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Name_____

Title_____

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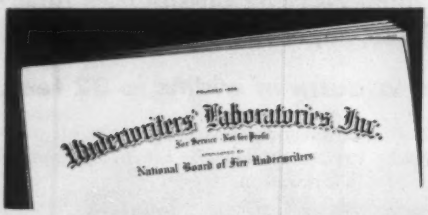
Fire-Snuf Panels are the *first* and *only* translucent, fiberglass-reinforced panels to be listed by Underwriters' Laboratories, Inc. They carry the UL label as evidence that they have and are continuing to meet Underwriters' rigid specifications.

They should be specified for skylights, sidewalls, partitions and glazing where fire hazards are unusual or codes call for a flame spread rating of below 75. This rating is equivalent to the Building Officials Conference of America (BOCA) classification of "slow burning" or "fire retardant." These panels are self-extinguishing and will not support combustion.



Complete test reports on the fire hazard classification of Fire-Snuf by Underwriters' Laboratories Inc., are available from the manufacturer on request.

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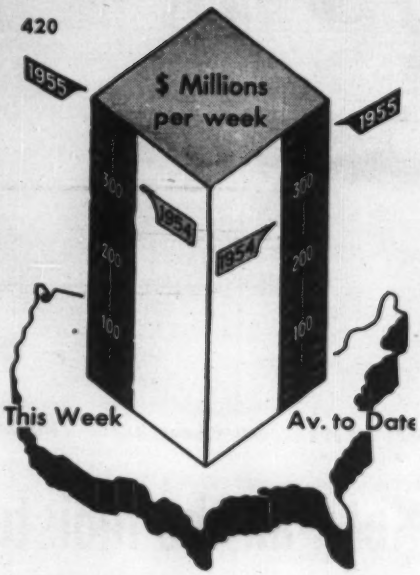
Activity This Week

As reported to ENR
(In millions of dollars)



Amount of contracts let

(millions of dollars)	This Week	Cumulative 42 wks 1955	1954	% chge
By Ownership				
Federal	$56.0	$1,389.8	$1,032.1	+35
State and municipal	106.3	4,366.1	3,992.7	+9
Total public	162.3	5,755.9	5,024.8	+15
Total private	257.6	9,608.5	6,578.9	+46
U. S. Total	$419.9	$15,364.4	$11,603.7	+32
By type of work				
Waterworks	$6.8	$222.0	$193.1	+15
Sewerage	9.2	327.7	311.2	+5
Bridges	6.6	397.5	408.8	−3
Highways	40.3	1,792.1	1,532.2	+17
Earthwork, waterways	34.4	448.4	269.5	+66
Buildings:				
Public, excl. hsg.	46.3	1,426.5	1,417.8	+1
Public housg.	1.6	223.3	198.4	+13
Private housg.	120.5	5,186.4	3,435.7	+51
Commercial	45.3	1,370.2	1,100.8	+24
Industrial	72.4	2,314.2	1,540.5	+50
Unclassified	36.5	1,656.1	1,195.7	+39
U. S. Total	$419.9	$15,364.4	$11,603.7	+32

NOTE: Minimum size projects included are: Waterworks and waterways, $44,000; other public works, $73,000; industrial buildings, $93,000; other buildings, $344,000.

New capital for construction

(millions of dollars)	Week of Oct. 13	Cumulative 41 Wks 1955	% Chge '54-'55
Corporate securities	$89.5	$2,815.3	+20
State and municipal:			
All except housing	55.8	3,270.7	−21
Housing	...	72.0	−21
Federal loans	...	110.0	+17
Federal aid	...	853.5	+27
Total nonfederal	$145.3	$7,121.5	−5
Federal appropriations:			
In U. S.	...	$3,379.7	+63
Outside U. S.	...	84.6	+155
Total new capital	$145.3	$10,585.8	+10

ENR cost and volume indexes, 1955

		Base years = 100 1913	1926	1949
Construction cost	10/13	673.74	323.87	141.24
	9/29†	673.95	323.97	141.28
Building cost	10/13	479.64	259.28	136.34
	9/29†	480.05	259.50	136.46
Volume	Sept.	576	234	166
	Aug.	508	207	147

† Official Indexes for October

GAW: The Outlook Improves

Two more states have attempted to clear the decks for successful integration of unemployment insurance laws and guaranteed annual wage plans.

In Maryland, a proposed amendment giving legal sanction to supplemental unemployment benefits has been overwhelmingly approved by the Legislative Council, a between-sessions arm of the Maryland General Assembly. And in New York, the State Industrial Commissioner, Isador Lubin, last week reached the conclusion that employer payments under GAW plans will not interfere with a worker's right to simultaneous unemployment insurance payments.

At the open hearing held by the Maryland council, the Associated Builders and Contractors of Maryland, Inc., failed to show up to reiterate the opposition it expressed last summer (ENR Aug. 25, p. 80). The lone dissenter was an attorney who said he feared that "legislative sanction" of GAW contracts would give labor a "hammer" which could be used in negotiating with companies resisting adoption of supplemental benefit plans.

• **Proposal**—The amendment approved by the council for submission to the general assembly next February gives a green light to GAW contracts by stating that the following payments shall not be construed in the nature of wages:

"The amount of any payment (including any amount paid by an employer into a fund to provide for any such payment) made to, or on behalf of, an employe under a plan or system established by an employer which makes provision for his employes generally, or for a class or group of his employes, for the purpose of supplementing unemployment benefits."

If approved by the General Assembly, the Maryland amendment will become effective June 1, 1956.

Members of the CIO, vigorously supporting the amendment, claimed that 5,000 Maryland workers are employed by companies—American Can and Continental Can being the largest—that have already signed GAW contracts. And the United Steel Workers predicted that 25,000 more will be included after it completes its negotiations with the steel companies next year.

Strengthening labor's position was testimony of the counsel for the Baltimore Association of Commerce. He indicated his group did not wish to interfere with GAW contracts because they are the result of private agreements reached by labor and management through the free enterprise system and are therefore consistent with the association's stand against government interference.

• **Of great significance**—In viewing with optimism the legality of the Ford plan in New York, State Industrial Commissioner Lubin characterized it as "a novel and untried venture of outstanding significance in the field of employer-employee relations".

His view of the legal aspects of company paid benefits is twofold: the payments are not "wages" so as to disqualify a worker for receipt of state benefits, and do not appear to be subject to the state payroll tax. Because of the public's vital interest in the plans, however, Lubin has asked the attorney general for a formal ruling on these points.

Of interest to all who are otherwise eligible for GAW benefits is the basis of Lubin's conclusions. To be eligible for state benefits, he said, a worker must be "unemployed"—which is the category into which he necessarily falls when he becomes eligible for company payments. Since payments by the employer do not constitute "remuneration," neither the company's payments into the trust fund nor subsequent payments to those laid off are subject to tax under the State Unemployment Insurance Law. He cautioned, however, that the payments will become subject to the state tax if the federal government should classify them as "dismissal payments" subject to the federal tax.

(*Labor continued on page 166*)

Building Trades Share in Industrial Peace Award

The Los Angeles Building Trades Council (AFL) and Fluor Corporation, Ltd., engineering and construction firm with headquarters in Los Angeles, were the 1955 recipients of the Father Coogan Labor-Management Award, presented each year to an industrial firm and affiliated labor unions in the area that have achieved significant harmony in labor relations. They were selected because of their "practical application of the kind of cooperation that enables unions to achieve the standards of working conditions their members enjoy, and to permit the employer to complete his job and attain fruitful results for his company." Fluor's formula, said vice president J. R. Fluor, includes recognition of the identical interests of both labor and management and the realization that "there is no fundamental disagreement between the two." Last year's award went to an affiliate of U. S. Steel.

Another Look at Training

Training is "the number one problem" facing American industry, according to W. F. Patterson, director of the U. S. Labor Department's Bureau of Apprenticeship.

At the Seventh Annual Southern States Apprenticeship Conference held earlier this month in Oklahoma, he said the "monumental job" that lies ahead falls on the shoulders of industry—government agencies can only help by promoting training programs and by providing facts and figures.

Cited as critically important is the continual and necessary process of streamlining existing programs and initiating new ones to meet the needs imposed by new products, new materials and new methods. To be successful, Patterson said, programs must be based on "future needs"—or more of the industries will be caught napping.

• **Current failures**—Emphasis, he stated, is now being placed on getting an adequate number of qualified craftsmen trained. According to the Labor Department's most recent figures, registered apprentices in the construction trades have been running only slightly in excess of 91,000 (accompanying table). And this is "not enough, AFL President George Meany said not long ago, to meet the needs of the industry. Between the years 1940 and 1953, for instance, the monthly average of those employed in contract construction, according to BLS reports, rose from 1,294,000 to 2,527,000—almost doubling.

In solving the task that lies ahead, Patterson said, one of the major roadblocks has been "the indifference or resistence of those journeymen who feel that their economic security may be endangered because of the advanced training that today's apprentices are receiving." To overcome this, he urged greater use of journeymen training programs and pointed out that it is practically impossible to train succeeding generations of skilled men unless experienced craftsmen, in whom repose the skills of the trade, are willing to pass along their knowledge to others.

• **Trends**—Among current trends, Patterson noted these:

• Recognition of the need for greater integration of vocational guidance and statistics with selection and placement.

• A wider exchange of ideas, practices and policies between private industry, civilian government agencies and the military.

• Greater use of modern training techniques, aids and devices to refine and strengthen the acquirement of skills.

• Improvement in the type and content of available related instruction material.

But despite the progress in these directions, he warned, hardly a beginning has been made "in finding short cuts that will save the time of the learner, and at the same time, enable us to include the training and instruction necessary to meet our vastly increased requirements."

Registered Apprentices in Construction Trades:

Registered Apprentices In Construction Trades

Trade	Number
Brick, stone and tile	8,407
Carpenters	23,150
Cement masons	818
Electricians (const.)	15,998
Glaziers (const.)	798
Painters (const.)	3,982
Plasterers	2,186
Plumbers, pipefitters	19,980
Roofers, slaters	1,098
Sheet metal workers	9,676
Structural iron workers	2,612
Other trades	2,726
Total	91,431

(BLS Reports as of Mar. 31, 1955)

State Labor Commissioner Urges Statutory Changes

One of the nation's state labor commissioners has taken a look at the labor laws of his state and has come up with six suggestions for their improvement, ranging from workmen's compensation to union representation election.

First on the list compiled by Kentucky's Commissioner of Industrial Relations Harrison M. Robertson, is a recommendation that the state establish rehabilitation machinery for employes injured in industrial accidents. Under the present procedure, Harrison says, employes receive monetary awards—but then are left to their own devices.

His other suggestions for consideration by the 1956 legislature are these:

• Empower the commissioner to hold union representation elections, with or without the consent of labor or management, upon a showing that a substantial number of employes want union representation.

• Give the commissioner power to conduct continuous wage and hour studies.

• Permit the state to sue for and on behalf of employes with wage claims of $200 or less against employers.

• Penalize employers who fail to file reports of agreements in claim settlements reached under the Workmen's Compensation Act.

Professional's Pay

One engineering college finds starting scale up

The average starting salary of young engineers continues its upward trend as competition for engineering graduates increases, according to a report issued this week by the New York University School of Engineering. Although the market price for civil engineers is higher, the group still remains low on the list, financially.

Results of a survey, based on interviews with students who registered last spring with the university's placement office, showed that members of the engineering school's 1955 graduating class received an average of five definite job offers each. Their average starting salary was $401 a month—an increase of 11½% over last year's average.

Civil engineers going into private industry received salaries ranging from $350 to $424—an average of $388—while those entering government service received an average monthly salary of $353. In private industry, this put them next to the bottom. Salary-wise, metallurgical engineers was the only group that fared worse. Highest paid were aeronautical and industrial engineers, who averaged $430 a month.

Average salary of engineers hired by private industry was $405. Those joining government agencies hit a salary average of $338.

"The survey indicates clearly that competition for engineering graduates is growing," said Thorndike Saville, dean of the university's School of Engineering. "Salaries advanced again and companies continued recruiting on the campus months before the end of the school year. Because of its relatively lower salaries, civil service—local, state and federal—continued to be at a disadvantage in attracting engineering employes."

With the exception of 1949, starting salaries for engineers have increased in each of the last eight years. The 1955 average is 76% higher than

that of 1947, when it was $227. Last year, civil engineering graduates entering private industry received an average salary of $355—$33 below this year's average, according to the survey.

State Labor Federation Seeking Familiar Goals

At its annual convention in Jackson, Miss., the Mississippi Federation of Labor (AFL) fanned again the major labor issues that dominated so many of the state legislative assemblies earlier this year (ENR Sept. 22, p. 17).

Included in the action of the federation was adoption of resolutions calling for:

- Repeal of the state's right to work law.
- Revision of the unemployment compensation law, extending the duration of benefits from 16 to 26 weeks and removing some of the restrictions applicable to insurance payments to claimants.
- Liberalization of benefits payable under the state's Workmen's Compensation Act.
- Enforcement of the $1.00 minimum wage law.
- Creation of a State Department of Labor.

Labor Briefs . . .

- **New job**—Peter McGavin of Detroit has been appointed special assistant to AFL President George Meany, now slated to become the nation's key labor figure after the AFL-CIO merger. McGavin was formerly the AFL's assistant director of organization.

- **Pay boost**—The Alabama chapter of the AGC has signed a new two-year contract granting laborers (both heavy and building) a 12½ cent wage boost, of which 2½ cents became effective last week. Laborers will get two more installments of 5 cents each on Dec. 1, 1955 and Jan. 5, 1956.

- **Strikes**—When contract negotiations between AFL Teamsters and Southern California Rock Products Association broke down earlier this month, 1,600 members of the union went on strike, threatening to slow down construction in Southern California.

- **Earnings up**—According to the U. S. Department of Labor, weekly earnings in contract construction reached a new high of $97.27 in June—75 cents above the previous maximum of Aug. 1954, and nearly $1.65 higher than June a year ago.

OFFICIAL PROPOSALS

APPEAR HERE EACH THURSDAY. PROPOSAL ADVERTISEMENTS ACCEPTED UP TO 10:30 A.M. FRIDAY FOR THE ISSUE DATED THE FOLLOWING THURSDAY.

Bids: November 8, 1955

New Jersey Turnpike Authority

CONTRACT NO. W-16

Proposals are invited for Contract No. W-16 which involves the construction of deep well water supply systems, including four wells and well houses, water mains, pumps and motors, water treatment installations, and other incidental work but not including casings and screens already installed for two of the four wells, in connection with construction of Service Areas 6-S and 6-N in Hamilton Township, Mercer County, New Jersey, all in connection with the construction of the widening of the New Jersey Turnpike.

Proposals will be received at the New Jersey Turnpike Authority, Administration Building, New Brunswick, New Jersey, until 11:00 O'Clock, Eastern Standard Time, on the morning of November 8, 1955, at which time and place said proposals will be publicly opened and read.

Bidders must submit with their proposal a Contractor's Financial and Equipment Statement.

Contract documents may be examined during office hours after October 18, 1955 at the office of the New Jersey Turnpike Authority, Administration Building, New Brunswick, New Jersey, and at the office of the Consulting Engineer, Elson T. Killam, 529 Millburn Avenue, Short Hills, New Jersey. Contract documents will be furnished upon payment of Ten Dollars ($10.00) for each set, upon application to the Authority. The payment will not be refunded and contract documents are not required to be returned.

NEW JERSEY TURNPIKE AUTHORITY
Paul L. Troast, Chairman

October 12, 1955

Bids: October 28, 1955

Kansas Turnpike Authority

Notice to Contractors

Notice is hereby given that sealed proposals for the construction and furnishing steel plate and cable guard fence in Butler, Chase & Lyon County, Kansas, will be received at the office of County Clerk in Topeka, Kansas, until 9:00 a.m. October 28, 1955 and then publicly opened as follows:

The work under Contract No. 35-(11-19)-G(1) comprises the construction of guard fence, guide posts, permanent monuments and monument tablets along the Kansas Turnpike, crossroads and interchanges between Turnpike Stations 5630+00 and 9178+55, a distance of approximately 66 miles.

Bid documents will be furnished qualified Contractors on deposit of $27.50 per set with no refund.

Further information regarding the work may be had by an examination of the plans and specifications on file in the office of the Butler, Chase & Lyon County Clerk or at the offices of the Kansas Turnpike Authority.

BY ORDER OF THE
KANSAS TURNPIKE AUTHORITY
Francis Jacobs, Chairman
Gale Moss, General Manager

READ THE OFFICIAL PROPOSAL COLUMN OF ENGINEERING NEWS-RECORD THIS WEEK AND EVERY WEEK

Bids: October 28, 1955

Kansas Turnpike Authority

Notice to Contractors

Notice is hereby given that sealed proposals for the construction of and furnishing steel plate and cable guard fence in Sumner, Sedgwick & Butler County, Kansas, will be received at the office of County Clerk in Topeka, Kansas, until 9:00 a.m. October 28, 1955 and then publicly opened as follows:

The work covered by Contract No. 13-(1-10)-G(1) consists of furnishing and erecting steel plate and cable guard fence and guideposts. Furnishing and setting permanent monuments and monument tablets along the Kansas Turnpike, crossroads and interchanges from the Kansas-Oklahoma line, thence north to Wichita and northeast to a point approximately midway between the towns of Andover and El Dorado approximately 2 miles east of the intersection of the Turnpike and FAS Route 83 in Butler County, for a total distance of approximately 61 miles.

Bid documents will be furnished qualified Contractors on deposit of $28.00 per set with no refund.

Further information regarding the work may be had by an examination of the plans and specifications on file in the office of the Sumner, Sedgwick & Butler County Clerk or at the offices of the Kansas Turnpike Authority.

BY ORDER OF THE
KANSAS TURNPIKE AUTHORITY
Francis Jacobs, Chairman
Gale Moss, General Manager

Bids: October 28, 1955

Kansas Turnpike Authority

Notice to Contractors

Notice is hereby given that sealed proposals for the construction and furnishing steel plate and cable guard fence in Douglas, Leavenworth & Wyandotte County, Kansas, will be received at the office of County Clerk in Topeka, Kansas, until 9:00 a.m. October 28, 1955 and then publicly opened as follows:

Work under this Contract—80-(32-43)-G(1) consists of furnishing and erecting steel plate and cable guard fence and guideposts and furnishing and setting permanent monuments and monument tablets between Turnpike Stations 13065 and 15070 in Douglas, Leavenworth and Wyandotte County, Kansas.

Bid documents will be furnished qualified Contractors on deposit of $19.00 per set with no refund.

Further information regarding this work may be had by an examination of the plans and specifications on file in the office of the Wyandotte, Douglas & Leavenworth County Clerk or at the offices of the Kansas Turnpike Authority.

BY ORDER OF THE
KANSAS TURNPIKE AUTHORITY
Francis Jacobs, Chairman
Gale Moss, General Manager

U. S. Government

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-4539) will be received at Red Bluff, California until December 6, 1955, for furnishing labor and materials for earthwork and structures for Corning Canal, Station 624+00 to Station 1048+27, Central Valley Project, California. Location near Corning, California. Principal items are 453,000 cu. yds. excavation; 164,000 cu. yds. earth lining; 4,000 cu. yds. riprap; 2,660 cu. yds. concrete; 6 radial gates, and other work. Completion time 450 days. For particulars, address Bureau of Reclamation, P. O. Box 752, Red Bluff, California; or Building 53, Denver Federal Center, Denver 2, Colorado. W. A. Dexheimer, Commissioner.

SEARCHLIGHT SECTION

OFFICIAL PROPOSALS

Bids: October 27, 1955

New York State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.,—Pursuant to the provisions of the Highway Law, Canal Law, Public Buildings Law, and Article 2, Title 9 of the Public Authorities Law, and special provisions for projects financed with Federal Aid Funds, sealed proposals will be received until ten-thirty o'clock A.M., advanced standard time, which is nine-thirty o'clock A.M., eastern standard time, on the 27th day of October 1955, by Henry A. Cohen, Director, Bureau of Contracts and Accounts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects:

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
DISTRICT No. 1, G. L. NICKERSON, District Engineer, 353 Broadway, Albany, N. Y.						
Schenectady	R.C. 55-74	Barge Canal, Lock Nine Connection, S.H. 1682	0.16	Open Mesh Bridge Decking and Cleaning & Painting Bridge = 0.14 Mi. Asph. Conc., Opt. = 0.02 Mi.	$9,000 Plans $10	$165,000
Washington	FARC 55-75	Thomson-Fort Edward, Pts. 1 & 2, S.H. 1685-A Project No. F-391(12)	0.63	Asp. Conc., Opt. Comp. Plate Girder 144'	$16,000 Plans $10	292,000
DISTRICT No. 2, LACY KETCHUM, District Engineer, 109 North Genesee Street, Utica 1, N. Y.						
Montgomery	U.S. 90	Lock 10 Erie Canal	....	Lower the Lower Sill and Floor of Lock Chamber; Replace Upper Sill; Install New Upper and Lower Gates Misc. Work	5% of Bid Plans $10	Not Published
DISTRICT No. 3, WM. ROBINSON, District Engineer, Weigh Lock Building, Syracuse, N. Y.						
Cayuga	S.T. 55-12	New York State Thruway-Ontario Section-Subdivision 4 County Road No. 116	0.60	Asp. Conc., Opt. R.C. Open Box Twin 35' Span	$6,500 Plans $10	115,000
Onondaga	M-55-4	Barge Canal Terminal City of Syracuse	....	Furnish & Erect 7,000' of Woven Wire Fence and 6 Single and 1 Double Gate	$1,200 Plans $10	21,800
Tompkins	FASS 55-8	South Lansing-Peruville, C.R. 107 Project S-283(2)	5.43	Bit. Mac. Opt.	$20,000 Plans $10	363,000
DISTRICT No. 5, E. G. H. YOUNGMANN, District Engineer, 65 Court Street, Buffalo, N. Y.						
Chautauqua	E.T. 55-10 S.T. 55-11 R.C. 55-73	New York State Thruway-Erie Section Subdivision E-1A (Penn. State Line to Barden Road); Ripley-Sherman Pt. 1, S.H. 1297 and Two Secondary Cross Roads and Access Roads	5.27 (3.19) (Acc.)	9" Two Crse. Cem. Conc. Pavt. 2@ 25' Wide = 5.23 Mi. Asp. Conc., Opt. = 3.16 Mi. Misc. Work = 0.07 Mi. 3 Hy. Seps. Comp. I-Beam 283.3', 260' & 280.5'	$196,000 Plans $50	3,565,000
Chautauqua	E.T. 55-11 E.T.C. 55-12 R.S. 55-77 S.T.C. 55-14 S.T. 55-13	New York State Thruway-Erie Section Subdivision E-3B (Dunkirk-Pomfret Town Line to Fredonia, Roberts Rd.); Bennett Road Interchange; Roberts Road S.H. 857 and Seven Secondary Cross Roads and Streets	3.48 (4.47) (Acc.)	9" Two Crse. Cem. Conc. Pavt. 2@ 25' Wide = 5.22 Mi. Asp. Conc. Ty. 2B = 0.07 Mi. Asp. Conc., Opt. = 1.40 Mi. Bit. Mac. Ty. 1 = 0.83 Mi. Bit. Treated Gravel = 0.41 Mi. Misc. Work = 0.02 Mi. 6 Hy. Seps. Comp. I-Beam 378.7', 254.9', 270.8', 335.7', 221.9' and Twin 58.2' Each 1 RR Sep. I-Beams Twin 213' Each	$260,000 Plans $100	4,711,000
Erie	GISP-RC 55-1	Grand Island State Parkway-South Parkway and West River Parkway (E. Service Road)	2.57	Asp. Conc., Opt.	$1,500 Plans $10	28,000
DISTRICT No. 7; R. W. SWEET, District Engineer, 444 Van Duzee Street, Watertown, N. Y.						
Clinton	R.C. 55-76	Rouses Point Village, S.H. 5228	1.07	Erosion Control = 0.96 Mi. Misc. Work = 0.11 Mi.	$6,000 Plans $10	104,000
Franklin	M-55-5	Lower Lock in Saranac River	....	Furnish New Gate; Resurface Walls with Pneumatically Projected Conc.; Stone Rubble Masonry and Three New Timber Docks	$2,100 Plans $10	39,136
DISTRICT No. 8, J. S. BIXBY, District Engineer, Pleasant Valley Road, Poughkeepsie, N. Y.						
Ulster	FASS 55-4	Rosendale-Tillson, C.R. 113 Project S-423(1)	0.08	Asp. Conc. Opt. Comp. Girder 126'6" Span and Conc. Slab 26'9" Span	$17,000 Plans $10	305,000
Westchester	Chp. 103, Laws 1945, Sec. 11 Chp. 52, Laws 1955, Sec. 10	N.Y.S.D.P.W. Storehouse Site Town of Mt. Pleasant		Grading, Paving and Fencing	$2,400 Plans $10	44,000
Westchester	H.T. 55-8	New York State Thruway-Hudson Section-Sub. 9B (Tappan Zee Bridge)	....	Construction and Repair of Ice Breakers	$125,000 Plans $10	2,272,000
Westchester	H.T. 55-9 S.W.C. 55-1	New York State Thruway-Hudson Section-Sub. 10 Southern Westchester Connection Sub. 11	....	Furnish & Install 32,400 L.F. Beam Type Guide Railing	$5,500 Plans $10	100,000
DISTRICT No. 10, M. E. GOUL, District Engineer, Montauk Highway at Little East Neck Rd., Babylon, L. I., N. Y.						
New York	CBE-RC 55-2	Cross Bronx Expressway Cont. 13C, FACBE 50-1 (Highbridge Interchange)	0.13	Removal of Exist R.C. Pavt. & Asp. Conc. Opt.	$1,100 Plans $10	20,000
DISTRICT No. 1, G. L. NICKERSON, District Engineer, 353 Broadway, Albany, N. Y. DISTRICT No. 8, J. S. BIXBY, District Engineer, Pleasant Valley Road, Poughkeepsie, N. Y.						
Westchester, Rockland & Schenectady	T.R.T. 55-1	New York State Thruway-Southern Westchester Connection-Sub. 11 Hudson Section-Sub. 9A and Mohawk Section-Sub. 1	....	Furnish & Install Three Emergency Generators	$600 Plans $10	11,000

Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts and Accounts, Albany, N. Y., and at the office of the District Engineers noted above, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

The deposit for Plans and Proposal Forms for each contract is indicated above. A refund will be made in full to bidders for return of one set, in good condition, within 30 days of award, or rejection of bid; refund for all other sets in good condition, similar period, will be 50% of deposit.

Special attention of bidders is called to "General Information for Bidders" in the proposal, specification, and contract agreement, and to the special provisions applying to projects financed with federal funds. Award of a contract is subject to priorities and allocations under the Defense Production Act of 1950, as amended, and all regulations issued thereunder.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Laws, as set forth in "Instructions to Bidders."

When optional types are permitted on contracts with federal funds, bidders must state in the space provided in the proposal the exact designation of the optional type upon which the proposal is predicated.

The right is reserved to reject any or all bids.

JOHN W. JOHNSON
SUPT. OF PUBLIC WORKS

Bids: November 10, 1955

Saratoga Springs, N. Y.

NOTICE TO BIDDERS
REARRANGEMENT OF FIFTH FLOOR
OF
GIDEON PUTNAM HOTEL,
SARATOGA SPRINGS, N. Y.

Separate sealed proposals covering Construction, Heating and Ventilating, Sanitary, Electric and Elevator Work for Rearranging of Fifth Floor of Gideon Putnam Hotel, Geyser Park, Saratoga Springs, New York, in accordance with Specifications 11-O; 11-HV; 11-S; 11-E and 11-EL and accompanying drawings will be received by the Saratoga Springs Authority at its offices in the Administration Building, Geyser Park, Saratoga Springs, N. Y., until 2:30 P.M. Eastern Standard Time on Thursday, November 10th 1955, when they will be publicly opened and read.

Each proposal must be made upon the form and submitted in the envelope provided therefor and shall be accompanied by a certified check, made payable to the Saratoga Springs Authority for 5% of the amount of the bid as a guaranty that the bidder will enter into the contract if it be awarded to him. The specification number must be written on the front of the envelope. The blank spaces in the proposal must be filled in, and no change shall be made in the phraseology of the proposal. Proposals that carry any omissions, erasures, alterations or additions may be rejected as informal. The Saratoga Springs Authority reserves the right to reject any or all bids. Successful bidders will be required to give a bond conditioned for the faithful performance of the contract in the sum of 100% of the amount of the contract and a separate bond for the payment of laborers and materialmen in the sum of 100% of the amount of the contract.

Drawings and specifications may be examined free of charge at the office of the Saratoga Springs Authority, Administration Building, Geyser Park, Saratoga Springs, New York and at the office of the Architect, August Lux and Associates, 143 Washington Avenue, Albany, New York.

Drawings and specifications may be obtained at the above named office of the Saratoga Springs Authority, by making a deposit for each set as follows: Construction $15.00; Heating and Ventilating $10.00; Sanitary $10.00; Electric $5.00 and Elevator $5.00 or by mailing such deposit to the Saratoga Springs Authority at the above address. Check should be made payable to the Saratoga Springs Authority. Proposal blanks and envelopes will be furnished without charge.

U. S. Government

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-4536) will be received at Yuma, Arizona until November 15, 1955, for furnishing labor and materials for earthwork, concrete lining, and structures, Ralph's Mill Area, Mohawk Laterals, Gila Project, Arizona. Location near Wellton, Arizona. Principal items are 325,000 cu. yds. excavation; 910 cu. yds. concrete in structures; 6,100 cu. yds. concrete in lateral lining; 7,000 lin. ft. concrete pipe; furnishing and installing 13 pumping units and steel discharge pipes; and other work. Completion time 325 days. For particulars, address Bureau of Reclamation, Bin 151, Yuma, Arizona; or Building 53, Denver Federal Center, Denver 2, Colorado. W. A. Dexheimer, Commissioner.

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Invitation No. DS-4537) will be received at Denver, Colorado, until December 1, 1955, for furnishing one (1) 18,000-horsepower, 225-rpm, vertical-shaft, hydraulic turbine for Roza Power Plant, Yakima Project, Washington. Delivery is desired within 480 days. For particulars, address Bureau of Reclamation, Building 53, Denver Federal Center, Denver 2, Colorado. W. A. Dexheimer, Commissioner.

OFFICIAL PROPOSALS

Bids: October 28, 1955

Kansas Turnpike Authority

Notice to Contractors

Notice is hereby given that sealed proposals for the construction and furnishing steel plate and cable guard fence in Lyon, Wabaunsee, Osage, Shawnee & Douglas County, Kansas, will be received at the office of County Clerk in Topeka, Kansas, until 9:00 a.m. October 28, 1955 and then publicly opened as follows:

The work covered under Contract No. 68-(20-31)-G(1) consists of the furnishing and erecting steel plate and cable guard fence and guide posts. Furnishing and setting permanent monuments and monument tablets on approximately 71.54 miles of Kansas Turnpike, including service roads, interchanges and crossroads in Lyon, Wabaunsee, Osage, Shawnee and Douglas Counties, Kansas.

Bid documents will be furnished qualified Contractors on deposit of $33.00 per set with no refund.

Further information regarding the work may be had by an examination of the plans and specifications on file in the office of the Lyon, Wabaunsee, Osage, Shawnee & Douglas County Clerk or at the offices of the Kansas Turnpike Authority.

BY ORDER OF THE
KANSAS TURNPIKE AUTHORITY
Francis Jacobs, Chairman
Gale Moss, General Manager

Bids: November 8, 1955

The Hydro-Electric Power Commission of Ontario

THE HYDRO-ELECTRIC POWER COMMISSION OF ONTARIO
ST. LAWRENCE POWER PROJECT
POWERHOUSE ICE SLUICE DRUM GATES
SERVICE GATE FRAME AND EMBEDDED PARTS

SEALED TENDERS, in sextuplicate, addressed to the undersigned, 620 University Avenue, Toronto 2, Ontario, and clearly marked

"TENDER FOR ST. LAWRENCE POWER PROJECT POWERHOUSE ICE SLUICE DRUM GATES SERVICE GATE FRAME AND EMBEDDED PARTS"

will be received up to 4:30 p.m. Eastern Standard Time on

TUESDAY, NOVEMBER 8, 1955

for the design, supply, manufacture, fabrication, shop testing, delivery, guarantee, and supervision of erection of drum gates, control equipment, service gate frame and embedded parts for both the Canadian and United States powerhouse ice sluices.

Delivery is required as follows: Anchors and items embedded in main concrete pours April 1, 1956, to September 1, 1956; remaining embedded parts March 1, 1957, to August 1, 1957. Drum gates, controls, etc., April 1, 1957, to September 1, 1957.

Copies of the tendering documents may be obtained on or after October 5, 1955, at the office of the Director of Supply, 620 University Avenue, Toronto 2, Ontario, on payment of $25.00 for each set. This charge will not be refunded.

Tendering documents may be inspected at the above address and at the offices of the following: The Commission's Field Office, Cornwall, Ontario; Power Authority of the State of New York, 270 Broadway, New York 7, New York; and Uhl, Hall & Rich, 230 Congress Street, Boston 10, Massachusetts.

The lowest or any tender will not necessarily be accepted.

E. B. EASSON
SECRETARY

Bids: October 25, 1955

Contracts 451 and 452

WEST DELAWARE TUNNEL

SEALED BIDS will be received by the Board of Water Supply, at its offices, thirteenth floor, 120 Wall Street, New York City, until 11:00 A.M., Eastern Daylight Saving Time, (10:00 A.M., Eastern Standard Time), on Tuesday October 25, 1955, for the following two contracts for the construction of the westerly portion of the West Delaware Tunnel of the Delaware system, comprising about 20 miles of concrete lined pressure tunnel, circular in section and 11 feet 4 inches in finished diameter, and Shafts 1 to 3 inclusive, 14 feet in diameter, which will be circular in section and lined with concrete, all as set forth in the specifications:

CONTRACT 451, for the construction of about 43,000 liner feet of tunnel, including an intake channel and Shaft 1, approximately 520 feet deep, located in the Towns of Tompkins and Hancock, Delaware County, New York.

CONTRACT 452, for the construction of about 60,000 linear feet of tunnel, including Shaft 2, approximately 310 feet deep, and Shaft 3, approximately 460 feet deep, located in the Towns of Hancock and Colchester, Delaware County, New York.

A bidder on both of these contracts may, if he so desires, specify in the bid form of either or both contracts, that he will agree to make a percentage reduction from the total cost of the contract, if both contracts are awarded to him.

Pamphlets of the two contracts containing information for bidders, forms of bid and contract, specifications, contract drawings, requirements as to surety, etc., can be obtained in the Chief Clerk's office, Room 1317 at the above address, upon application in person or by mail, by depositing the sum of $5.00 for each pamphlet. Within 30 days following the award of contract or rejection of bids the full amount of such deposit will be refunded for each pamphlet submitted as a bid and a refund of $4.00 will be made for each other pamphlet returned in acceptable condition. Arrangements will be made whereby prospective bidders desiring blueprints of the contract drawings for their own use may secure same, the cost thereof to be paid by them. For further particulars, apply at the office of the Chief Engineer at the above address.

IRVING V. A. HUIE, President, EDWARD C. MAGUIRE, HERBERT M. ROSENBERG, Commissioners; Board of Water Supply; BETTY COHEN, Acting Secretary.

Bids: November 17, 1955

Town of Bethlehem, N. Y.

ADVERTISEMENT
NOTICE TO CONTRACTORS

Notice is hereby given that sealed bids or proposals enclosed in sealed plain wrapper bearing the appropriate identification, "Bid for Vly Creek Reservoir, Dike and Dam," will be received by the Board of Water Commissioners at its office in the Town Hall, Town of Bethlehem, New York at 7:30 P.M. Eastern Standard Time on the 17th day of November, 1955; and then will be publicly opened and read aloud at a meeting of said Board, to be held at such time and place.

The work includes the construction of a compacted earth fill dike, 720 feet long with a maximum height of 40 feet, on the south branch of Vly Creek and a similar earth fill dam with concrete spillway on the east branch of Onesquethaw Creek, in the Town of New Scotland, southeast of the Hamlet of New Salem. The maximum height of the dam will be 25 feet. The dike and dam will have steel sheet piling corewall with sheet piling and concrete cutoff wall at the dike and a concrete cut-off wall at the dam. Both structures will have dumped stone rip rap on their up-stream surfaces. The work will also include reservoir drains, and intake works at the dike.

Copies of the plans and specifications may be examined at the office of the Town Clerk of the Town of Bethlehem, New York, 393 Delaware Avenue, Delmar, New York, or at the office of the Engineers, Benjamin L. Smith & Associates, 11 North Pearl Street, Albany, New York; copies thereof may be obtained from the Board and/or Engineers upon payment of Twenty ($20.00) Dollars for each set of plans and specifications.

Proposals must be submitted on the blank forms provided and in a manner designated therein. Each proposal must be accompanied by a Bid Bond or certified check in an amount equal to Five Per Cent (5%) of the total bid. The Bid Bonds or certified checks of all but the three lowest bidders will be returned within three days after the opening of bids, while the remaining bonds or checks will be returned as soon as a contract has been executed. The Bid Bond or certified check of the successful bidder will be retained to pay any loss or damage to Water District No. 1 and/or the Town of Bethlehem, in the event said successful bidder shall refuse or neglect to enter into a contract in accordance with his proposal. Acceptance of the bid will be contingent upon the fulfillment of this requirement by each bidder.

The Board of Water Commissioners reserves the right to consider bids for a period of Forty-five days after their opening, and the right is reserved to reject all bids.

BOARD OF WATER COMMISSIONERS,
WATER DISTRICT NO. 1,
TOWN OF BETHLEHEM, NEW YORK.
By: Harold C. Barkhuff, Chairman

Prequalification Date: October 27, 1955

Board of Education
Bureau of Construction
Notice Re Prequalification Forms For Contractors

NOTICE IS HEREBY GIVEN THAT THE Director, of the Bureau of Construction, 4th Floor, 42-15 Crescent Street, Long Island City 1, New York, will receive applications for prequalification of bidders, from contractors who may wish to submit bids for the proposed hereinafter specified contracts, as follows:

For (1) general construction, (2) plumbing and drainage, (3) heating and ventilating, (4) electrical work and lighting fixtures for the following schools:

BOROUGH OF BRONX

Junior H.S. 139, Brook Ave., & East 141st St., New Building.

Junior H.S. 141, West 236th St. and Independence Ave., New Building.

BOROUGH OF BROOKLYN

Junior H.S. 278, Stuart Ave. and Fillmore Ave., New Building.

BOROUGH OF MANHATTAN

New York School of Printing, West 49th St. and 9th Avenue, New Building.

BOROUGH OF QUEENS

Junior H.S. 204, 37th Ave. and 28th Street, New Building.

Newtown H.S., 48-01 90th Street, New Addition, and Modernization.

BOROUGH OF RICHMOND

P.S. 50, Adelaide Ave. and Clawson St., New Building.

Prequalification application forms will have to be secured and must be submitted to the Director, Bureau of Construction office, 4th Floor, Room 407, 42-15 Crescent Street, Long Island City 1, New York.

Bids will be received from prequalified bidders only.

The time for submitting prequalification application forms for the above contracts will expire on Thursday, October 27th, 1955.

WILLIAM H. CORREALE
Director

Dated: October 11th, 1955.

U. S. Government

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-4524) will be received at Glendive, Montana, until November 22, 1955, for furnishing labor and materials for Glendive Substation Additions, Fort Peck Project, Montana. Location near Glendive, Montana. Principal items are 360 cu. yds. excavation; 115 cu. yds. concrete; 20,000 pounds furnishing and erecting steel structures; 5 transformers; installing transformers; lump sum performing overhead ground wire work; and other work. Completion time 210 days. For particulars, address Bureau of Reclamation, P. O. Box 2553, Billings, Montana; P. O. Box 866, Glendive, Montana, or Building 53, Denver Federal Center, Denver 2, Colorado. W. A. Dexheimer, Commissioner.

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-4541) will be received at Albuquerque, New Mexico, until November 15, 1955, for furnishing labor and materials for Earthwork and Structures for Atrisco Siphon and Appurtenant Features, Middle Rio Grande Project, New Mexico. Location near Albuquerque, New Mexico. Principal items are 100,000 cu. yds. excavation; 2,040 cu. yds. concrete; 1,250 lin. ft. 78-inch precast concrete pipe; slide gates; roller gate; flowmeter and miscellaneous metalwork; and other work. Alternative schedules are provided for constructing the 78-inch siphon barrel of monolithic concrete or of precast concrete pipe. Completion time 200 days. For particulars, address Bureau of Reclamation, P. O. Box 252, Albuquerque, New Mexico, or building 53, Denver Federal Center, Denver, Colorado. W. A. Dexheimer, Commissioner.

POSITION VACANT

BRIDGE ENGINEERS

Civil Graduates of accredited U. S. colleges. Must have not less than the following experience:

Detailers—2 years structural steel or reinforced concrete detailing.

Designers—4 years responsible work on structural steel and concrete including work on long span bridges.

Mail complete resume together with salary required to:

Howard, Needles, Tammen & Bergendoff
55 Liberty Street New York 5, N. Y.

(Continued on page 170)

EMPLOYMENT OPPORTUNITIES

The Advertisements in this section include all employment opportunities—executive, management, technical, selling, office, skilled, manual, etc.

Positions Vacant
Positions Wanted
Part Time Work
Civil Service Opportunities....
Selling Opportunities Wanted
Selling Opportunities Offered
Employment Agencies
Employment Services
Labor Bureaus

DISPLAYED —RATES— **UNDISPLAYED**

The advertising rate is $24.25 per inch for all advertising appearing on other than a contract basis. Contract rates quoted on request.

An advertising inch is measured ⅞" vertically on a column—3 columns—30 inches to a page.

Subject to Agency Commission.

$1.80 per line, minimum 3 lines. To figure advance payment count 5 average words as a line.

Box Numbers—counts as 1 line.

Discount of 10% if full payment is made in advance for 4 consecutive insertions.

Not subject to Agency Commission.

Send NEW ADS to ENGINEERING NEWS-RECORD, 330 W. 42nd St., N. Y. 36, N. Y. for November 3rd issue closing October 24th

REPLIES (Box No.): Address to office nearest you
NEW YORK: 330 W. 42nd St. (36)
CHICAGO: 520 N. Michigan Ave. (11)
SAN FRANCISCO: 68 Post St. (4)

POSITIONS VACANT

Structural Steel detailers and checkers—permanent employment offered to qualified men. Please send experience record and salary required to Pittsburgh Des Moines Steel Company, Santa Clara, California.

Assistant Engineer, civil engineering background. Training and experience in one or more of the following: design of subdivisions; sewer and water; streets. This is a career position in a consulting engineer's office. Applicant must be available immediately. Salary to $8000. State experience, education and give references. Lester V. Johnson Associates 2309 Wilson Boulevard Arlington 1, Virginia.

Civil Engineer, research and development—experienced in asphalt pavement construction and with ability to prepare construction specifications and technical manuals. Pleasant living conditions with special employment benefits. Location East Coast. State salary expected. P-7887, Engineering News-Record.

Wanted—Estimator-Engineer for building construction work in Texas. An experienced estimator for building construction work qualified to estimate and price all phases of building construction. Projects would vary in size from $100,000 to $1,000,000. Please give training, experience, and references from contractors in this field. P-7933, Engineering News-Record.

Engineer to design and write up specifications for fishways, hatcheries, counting weirs, and other engineering projects and to supervise construction of same. For application forms and further details, write to Alaska Department of Fisheries, 229 Alaska Office Building, Juneau, Alaska.

Engineers—Experienced in design and preparation of plans for water works and sewerage systems and structural design. Advise education, experience, salary requirements and when available. Location Eastern New York. Reply P-7657, Engineering News-Record.

Associate City Engineer—for general municipal work. Experience in operation or construction of Sewage and Water Works desirable. Send complete record of education, experience, references, personal data, salary desired and date available to City Engineer, Mankato, Minnesota.

Architect—Qualified through training and experience to design churches, schools and other buildings. Give full information as to education, experience, salary requirements and when available. Location Eastern New York. P-7658, Engineering News-Record.

Civil Engineer—Recent graduate for interesting design work in permanent position with a future. Salary and benefits above average. The Metropolitan District, Hartford, Connecticut.

Wanted. Sanitary or Civil Engineers as resident engineers on large sewage project involving sewage treatment plant, pumping stations, and 63½ miles of intercepting sewers including 30 miles in tunnel. Program calls for 3-year construction period. Must be experienced. Give full particulars and salary first letter. Allegheny County Sanitary Authority, 701 Civic Building, Pittsburgh 19, Pennsylvania.

POSITIONS VACANT

Concrete Products manufacturing concern has openings for one foreman and one salesman. Must have energy and efficiency. Write experience, salary to P. O. Box 322, Union, N. J.

Architectural Draftsman. Senior immediate opening for highly skilled architectural draftsman to do important work on large project consisting of motel, cafeteria, administration building, commissary and theatre. Ability in specification writing and checking helpful. Job duration approximately 16 months. Salary dependent on experience and capability. Call J. A. Fuller, Director of Employment, Colonial Williamsburg, Williamsburg, Virginia. Phone 330.

Surveyor licensed NY State, expd, head dept, possible association; work in Rockland County. Reply full details in confidence. P-7966, Engineering News-Record.

Draftsmen, experienced structural steel detailers on ally types of buildings and conveyor work. Long range program, good working conditions in a consulting engineer's office, paid holidays and vacation plan. Send complete information to: Samborn, Steketee & Associates, 1214 Cherry Street, Toledo 4, Ohio.

Engineer-Draftsman: Wanted by Seaboard Air Line Railroad, college graduate in Civil Engineering, to fill vacancy in drafting room, handling design and detail drawings for railroad buildings and shop facilities. Experience desirable. Write W. D. Simpson, Chief Engineer, 752 Seaboard Air Line Railroad Bldg., Norfolk 10, Va.

Quarry Superintendent, capable of setting up and running complete operation, location—New England. P-7921, Engineering News-Record.

Field Office Manager, highway construction, handle payroll, cost, equipment records, etc. Present location, New England, permanent status for right man. P-7918, Engineering News-Record.

EMPLOYMENT SERVICE

Salaried personnel, $5,000-$30,000. This confidential service, established 1929, is geared to needs of high grade men who seek a change of connection under conditions assuring, of employed, full protection to present position. Send name and address only for details. Personal consultation invited. Jira Thayer Jennings, Dept. L, P. O. Box 674, Manchester, Vermont.

POSITIONS WANTED

Senior Structural Engineer registered in several states with connections to State Highway and Bridge Departments wishes partnership with established engineering firm. PW-7886, Engineering News-Record.

Materials Engineer thoroughly familiar with sampling, testing and design for soils, asphalt and concrete desires employment foreign and domestic, particularly paving. 8 years concentrated experience, single, age 31, geology major, "Q" cleared. PW-8020, Engineering News-Record.

Estimator-Superintendent for dredging contractor, age 28, registered C.E., with six years experience estimating, bidding & managing marine construction, designing, building & maintaining marine equipment, purchasing & selling service to industry wants position where training, experience & ability will be utilized. PW-8005, Engineering News-Record.

POSITIONS WANTED

Specifications—experienced. Specializing in government construction. Fee basis. PW-8009, Engineering News-Record.

Civil-Structural Engineer, seasoned with excellent diversified domestic and foreign experience, knowing languages, wishes foreign position of responsibility and trust. PW-7889, Engineering News-Record.

Controller—20 years broad experience—top administrator all financial and accounting functions—last 12 years engineering and construction. Resume on request. PW-7922, Engineering News-Record.

Available for assignment domestic overseas as field coordinating, material engineer project supervisor general superintendent industrial, plant or air base construction. PW-8003, Engineering News-Record.

Material Engineer—Laboratory testing and field inspection of concrete, soils, and asphaltic concrete. Available November 15, 1955. Prefer South or Midwest. PW-7967, Engineering News-Record.

Civil-Structural Engineer, reg. in several states, over 25 years of first class experience desires permanent position of responsibility in bridges and buildings. PW-7892, Engineering News-Record.

Construction Engineer, age 51, 25 yrs. experience, presently employed as chief engineer and head estimator for nationally known heavy construction firm. Familiar with joint venture procedures and all phases of construction. Permanent position desired in any part of country. References from present employer and associated joint venture companies. PW-7984, Engineering News-Record.

Construction Engineer, B.S. Degree, age 28, 5 years field experience. Capable of supervising projects. Willing to travel or relocate. Available immediately. Resume on request. Write PW-7978, Engineering News-Record.

Civil and Struct. engineer-registered seeks resp. work as designer and estimator with consult. eng., contractor or authority. Long exp. on building, civil eng. and hydro jobs. Prefer California, N. Y. City, Chicago. Soon available. PW-7973, Engineering News-Record.

SELLING OPPORTUNITY WANTED

Engineers (3) available for technical representation or distributorship within 300 mile radius New York City. RA-7995, Engineering News-Record.

When Writing Your Ad

Provide an indexing or subject word.
Write it as the first word of your ad.
If it is a Position Wanted or Position Vacant ad, make the first word the kind of position sought or offered.
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SAN FRANCISCO ASSIGNMENT

Attractive opportunities available at San Fancisco with an expanding established world-wide engineering and construction organization for personnel with recent design experience applicable to petroleum refineries, central steam power plants, compressor stations, chemical plants or related heavy industrial projects.

Please write furnishing complete chronological experience record and salary history. Also, full details regarding education, salary desired, business and character references.

BECHTEL CORPORATION
220 Bush Street **San Francisco, Calif.**

ENGINEERS
HIGHWAYS AND BRIDGES

Designers
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Hydrologist
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Domestic and Overseas Assignments
Knowledge of Foreign language necessary in some classifications.

Write giving full particulars concerning education, experience, personal history and availability to:

Richard L. Shaw
Personnel Director
Michael Baker, Jr., Inc.
Consulting Engineers
Baker Building **Rochester, Penna.**

WANTED: ASS'T TRAFFIC ENGR.

For traffic engineering department just recently established. Salary range $554 to $670 a month with maximum salary obtainable through annual and longevity increases. Registration as a professional engineer required. Applications accepted until the needs of the service are filled. Write Personnel Department, City Hall, Madison 3, Wis.

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EMPLOYMENT IN CALIFORNIA

Established progressive engineering firm engaged in domestic and atomic energy program offers opportunity for immediate placement in

LOS ANGELES
ENGINEERS
Mechanical
Structural
Electrical
Architectural
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Please mail resume indicating age, education, experience and salaries to Atten: A. W. Jamieson, Jr., 816 S. Figueroa St., Los Angeles, Calif.

HOLMES & NARVER, INC.
816 S. Figueroa St.
Los Angeles, California

U. S. CITIZENSHIP REQUIRED

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PERMANENT OPPORTUNITIES
AT OUR

Cleveland, Ohio, offices with an engineering firm having over 50 years of successful operation doing business all over the world.

The McKEE organization continues to grow and expand and continues to offer many permanent present and future opportunities for qualified, experienced ENGINEERS and DESIGNERS in the following fields:

—STRUCTURAL STEEL
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and
—ELECTRICAL DRAFTSMEN
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Excellent Opportunities for
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Experienced in BLAST FURNACE and sintering Plant layout.

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Please Send Resume To:

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Architectural Designers
Mechanical, Electrical, Structural Engineers & Draftsmen

Varied and interesting work in a progressive consulting office. Long range program, good working conditions and employee benefits.

Must be experienced and capable of checking design drawings.

Send complete resume of experience.

Samborn, Steketee & Associates
1214 Cherry Street
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ENGINEERING OPPORTUNITIES

For young graduate Civil Engineers interested in future as highway design engineers. Training under competent highway specialists in expanding well-established firm.

Permanent positions now available. Some highway experience preferred but not required.

Excellent starting salaries, moving allowance, Blue Cross, paid vacations and holidays; sick leave, and voluntary employee benefit and retirement plan.

Write for application form.

SVERDRUP & PARCEL ENGINEERING CO.
1134 Locust St. ***St. Louis 1, Mo.***

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Expanding Construction Firm, Location Mid-West, needs following personnel.

Estimators and Take-Off Men. Degree Required. Some Travel.

Laboratory Technician. Experience in Soils, Concrete, Asphalt Design on testing work necessary.

Construction Supts. and Foremen. Experience in Highway, Airport, Heavy Construction essential.

Send resume of experience, references and recent photograph.

P-7950, Engineering News Record
520 N. Michigan Ave.
Chicago 11, Ill.

(Additional Employment Advertising on Following Page)

ENGINEERS
and
DRAFTSMEN

Growing company expanding engineering division. Opportunities for rapid advancement into management and development work on TV broadcast antenna towers, industrial buildings, aircraft hangars, mechanical parking garages. Liberal benefits, including retirement. Moving expenses paid.

Write
Freeman Mann
DRESSER-IDECO COMPANY
One of the Dresser Industries
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CIVIL ENGINEERS
MECHANICAL ENGINEERS
ELECTRICAL ENGINEERS

Caterpillar Tractor Co., the world's leading manufacturer of diesel tractors, motor graders, engines and earthmoving equipment, has openings for engineers in their sales departments. Applicants for these responsible positions should have engineering degrees or considerable practical experience. Civil, mechanical and electrical engineers are desired. Security and advancement are certain for qualified men and starting salaries are well above the industry average. Applicants should send full particulars of experience and education to: Sales Promotion Department, Caterpillar Tractor Co., Peoria, Illinois.

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Having experience with heavy material handling equipment

Permanent Position For Qualified Men

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Phone or Write
Chief Engineer for interview

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Eastern Architect-Engineer firm has permanent staff position open for registered Architect or Civil Engineer with extensive experience in Master Planning of complete Airports.

Send resume of experience as well as references. Salary open.

P-8024, Engineering News-Record
330 W. 42nd St., New York 36, N. Y.

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experienced testing such materials as cement, asphalt, plaster, aggregates, soils, and other general construction materials. Excellent laboratory facilities, pleasant conditions. Permanent position. Opportunity to develop. Send resume and salary expected.

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Registered Civil Engineer specialized in Highway and Turnpike design. Will head a newly formed Highway Engineering subsidiary of a well-established eastern engineering and construction firm.

Send complete resume of experience and names and addresses of three references. Salary open.

P-8021, Engineering News-Record
330 W. 42nd St., New York 36, N. Y.

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Phone 330

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SUPERINTENDENTS
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CONSTRUCTION FIELD ENGINEERS
Familiar with foundation and heavy construction. Reply—giving full particulars as to age, experience and salary to:
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INTRUSION-PREPAKT, Inc.
779-E Union Commerce Bldg. Cleveland 14, Ohio

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COST ENGINEER
DESIGNER-DRAFTSMAN
CONCRETE INSPECTOR

For field work in Western Pennsylvania. Previous power house experience on steam electrical construction necessary. Reply to

P-8025, Engineering News-Record
330 W. 42nd St., New York 36, N. Y.

OVERSEAS EMPLOYMENT
GUAM PROJECT
PRINCIPAL ENGINEER

Graduate Engineer with at least 8 years' experience in design of structures, utilities and roads. Civil Engineer preferred.

Write, giving detailed account of experience, education, etc.

BROWN-PACIFIC-MAXON
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REPLIES (Box No.): Address to office nearest you
NEW YORK: 330 W. 42nd St. (36)
CHICAGO: 520 N. Michigan Ave. (11)
SAN FRANCISCO: 68 Post St. (4)

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Licensed New York professional engineering corp. For Sale. BO-7972, Engineering News-Record.

For Sale—Well established and completely equipped construction business enjoying an excellent reputation for high quality work. Specializing on homes, light industrial and commercial construction, this business is located within 80 miles of Washington, D. C. It is in a popular vacation section but has a basic sound industrial economy. The area is ready for some speculative building. In addition to its construction business this company has 3 good selling franchises closely allied to its building work. This is an excellent opportunity for a single owner to net $15,000 per year with an investment of about $50,000. BO-7981, Engineering News-Record.

BUSINESS OPPORTUNITY

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BO-8026, Engineering News-Record
330 W. 42nd St., New York 36, N. Y.

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Send post card for details.

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LARGE CAPACITY VERTICAL PUMPS—SUBMERGED PROPELLER TYPE

No.	Make	Capacity at Head		Suction Dia.	Discharge Dia.	Motor Size	Voltage
2	Fairbanks-Morse	1580 gpm.	56′	10″	8″	30 HP	440 V.
1	Aurora	5000 gpm.	25′	16″	16″	50 HP	440 V.
2	Couch	6000 gpm.	40′	20″	18″	150 HP	2400 V.

These pumps take the headache out of pumping problems in cofferdams and similar places.

We also offer G.E. transformers as follows:

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THE TULLER CONSTRUCTION COMPANY
95 Monmouth St. *Red Bank 6-2440* Red Bank, New Jersey

FOR SALE

Allis-Chalmers TR200 Motorwagon 11 yds. struck, 15 yes. heap end dump. 176 HP Buda Diesel Engine. Very few hours on this machine.

Buckeye Service Utility Ditcher #403 Continental 244 Gas Engine, our demonstrator.

Both these machines in perfect order.

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Phones: Watertown 3-0620 — Burlington 7-2131

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1—3000B Manitowoc 50 Ton Liftcrane, Torque Converter 100′ Boom 20 or 30′ Jib

Hennessey-Forrestal Machy. Co.
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Jaeger CSS combination spreader-finisher, 20-25′ width, with quick crown change screed, powered by Continental gas engine, includes all necessary traction wheels and transportation wheels, delivered new 1955. Approx. 3 miles work—Good as new—price $12,500.00 f.o.b. cars Georgia shipping point, subject prior disposition.

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Used 2½ yd. SHOVEL
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19
LORAIN
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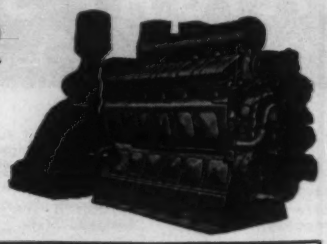

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KW	Make	Model	HP	RPM	KW	Make	Mode	HP	RPM
1180	Worthington	SEH-8	1685	360	320	Superor	60E-6	460	450
1136	Fairbanks Morse	38D	1600	720	300	Fairbanks Morse	32E14	450	300
1100	General Motors	16-278A	1600	720	300	General Motors	8-268A	450	1200
1000	General Motors	16-567B	1440	720	250	Clark	GD-4	375	360
750	General Motors	12-567	1080	720	200	General Motors	8-268A	350	900
700	Worthington	EE-8	1000	327	175	General Motors	12-71	275	1800
675	Fairbanks Morse	38D	960	720	150	Buckeye	80	240	600
500	General Motors	8-567	720	720	148	Fairbanks Morse	32E14	220	300
500	Alco	6-12½x13T	750	600	100	General Motors	3-268A	150	1200
350	Baldwin	VO-6	510	450	60	General Motors	6-71	90	1200
320	Enterprise	D8G-6	460	450					

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Vulcan and McKiernan-Terry
Steam Pile Hammers and Extractors
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200 ton American Guy Derrick 160' Bm.
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140 HP 2D Diesel Hoists 15000# SLP.
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2—45 and 65 ton diesel electric locomotives.
1—30 ton Industrial Brownhoist Diesel Locomotive Crane.
1—large lot new spare parts for 25-ton Industrial Brownhoist Locomotive Crane.
8—50 ton, 40' long Flat Cars.
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Girard Trust Building
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STORAGE BATTERY
LOCOMOTIVES
1½ to 10 Ton — 18" to 56" Track Gauge
GREENSBURG MACHINE CO.
Greensburg, Pennsylvania

Lorain 820
CRANE OR DRAGLINE
S/N 17646 Cat. 13000 Price $18,500
Wanted—Hyster Towing Winches—All sizes.
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FOR SALE or RENT—EASY TERMS
Rebuilt-A1 Condition
48B Bucyrus Erie Shovel 2 cy diesel
Northwest Model 6 Shovel, 1½ c.y.
Caterpillar Auto Patrol No. 12
Caterpillar D8 Bulldozer
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CABLEWAYS
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CAPACITY 3 to 20 TONS
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Capacities to 70 Tons
Booms to 140 ft. and 30 ft. jibs.
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Top-Condition erection cranes

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Bottom Dump Units

10-Model 43 FDT's Available
Also
1-EUCLID Mod. 3 BV LOADER

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A Joint Venture
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One Lippman Belt Conveyor Hopper Car Unloader complete with 60 ft. radial stacker, gas engine driven, mounted on two (2) pneumatic tires, like new.
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Phone: PRospect 6-4000

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PILE HAMMERS AND EXTRACTORS
REBUILT AND REPAIRED
AT FACTORY STANDARDS
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BRIDGE and STEEL BUILDING

BRIDGE

Will be Available for Delivery Completely Dismantled and Matched Marked November 1st 1955
LOCATED IN NORTH DAKOTA

4 SPANS 273 FEET EACH

19 FT. 6 INCHES PANEL POINT TO PANEL POINT

23 FT. 10 INCHES CENTER TO CENTER TRUSSES

DESIGNED FOR A.A.S.H.O.

LOADING H 15 SPECIFICATIONS JUNE 1925

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TWO STORY STRUCTURAL STEEL BUILDING FOR SALE

Two-Story structural steel building 460' x 110' with a "Special Truss" trussed roof. Roof designed for a 40 pounds per square foot load. Second floor design load ranges from 325 pounds per square foot to 490 pounds per square foot. Exterior of building is covered with a combination of corrugated aluminum siding, pivoted shutters with sheet aluminum siding, and pale green resolite.

Available for delivery completely dismantled and match-marked IMMEDIATELY.

LOCATION NEAR HOT SPRINGS, ARK.

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New and Used material—Immediate delivery from stock Angles, Channels, I and WF Beams, especially for Contractors needs

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20 pcs	8" B P	36#	60/65'
35 "	10" B P	42#	60/65
70 "	12" B P	53#	60/65
14 "	12" B P	74#	60/65

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Phone or Wire your steel requirements

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CYpress 9-5440

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SURPLUS NEW and USED **For Sale or Rent**

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IMMEDIATE SHIPMENT

280 pcs. 60-30 ft. M-116 & M-115—Illinois
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Vulcan and McKiernan-Terry Steam Pile Hammers and Extractors Hoists and Boilers

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509 Locust St., Chestnut 1-4474, St. Louis, Mo.

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80—Pcs. M-116, 25 to 30 ft., Minnesota
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Piling Timber and Lumber

Specified for heavy-duty marine Construction by U. S. Navy, Corps of Engineers, Coast Guard.

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125 TONS ALGOMA B6—20', 35' & 40' CANADA.
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9 Diesel Electric Locomotives
G. E. 25, 35, 45, 65, 80 & 100 TON.

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130' BOOM—30' GAUGE—3 DRUM HOIST.

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400 YD. JOHNSON OCTAGON BIN. WEIGHERS. 800 BBL. CEMENT BIN. CONVEYORS. FEEDERS. 3—2 YD. TILT MIXERS. ALL COMPLETE.

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10 x 36 CRUSHER — 30 x 18 ROLLS, VIB. SCREENS & CONVEYOR.

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Get the exact lengths and sections you need of all standard sections, delivered *on time*—and at Foster's usual low rental rates

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PIPE FOR PILING
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PILE HAMMERS & EXTRACTORS

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BAY CITY Model 65
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EDITORIALS

The Engineering Wonders of the U. S.

THE COMMITTEE of the American Society of Civil Engineers which was tapped to designate seven projects deserving to be rated as the engineering wonders of the U. S. (see p.) has disbanded. And well it might, for by scattering to all points of the compass its members have reduced the chance of injury from broadsides aimed at their selections.

Anyone contemplating such mayhem, however, might first ponder some questions found on a scratch pad used by one of these unfortunates. What makes a project wonderful? Bigness? Complexity? Precedent shattering? Usefulness? Economic effect? Advancement of design or construction technique? What, as a matter of fact constitutes a project? A single structure or a group of structures?

Obviously the picking of seven engineering wonders is a stimulating exercise. The last note on the scratch pad was blurred but seemed to read, "Pick your own list."

Corporate Practice of Engineering

INTERESTING OBSERVATIONS concerning the practice of engineering by corporations are made by A. L. McCawley in his book, "Professional Engineering Registration Laws" (ENR Sept. 1, p. 68), which he compiled at the request of the National Society of Professional Engineers. Because Mr. McCawley approaches his subject from the viewpoint of a lawyer rather than that of an engineer, what he says may have real practical value where the question of amending a state's license law to give legal status to corporate activities is being considered.

Mr. McCawley's most significant conclusion is that most if not all of the attempts made to date to include provisions relating to corporate practice in engineer license laws probably are unconstitutional. He says: "How to write a law that will require a natural person to have an engineering education, pass an examination and secure a license, or registration, before he can practice his profession, and, at the same time, permit a corporation which cannot acquire an engineering education or pass an examination to practice without a license, or to grant it a license, without infringing upon the rights of natural persons, is a problem yet to be solved."

"No single statute regulating the practice of engineering by, or through the medium of a corporation, the partnership practice of engineering, and the registration of professional engineers will effect the solution of corporate practice or be valid as constitutional according to the opinion of many courts of final jurisdiction."

The logical conclusion to be drawn from these statements is that the proper way to regulate the practice of engineering by corporations is through the general corporation law of each state. The same consideration applies to partnerships, if we read Mr. McCawley's statements correctly. Then the engineer license law would apply only to natural persons, which is what most engineers consider necessary.

Were this point to be definitely settled, perhaps the area of disagreement over corporate practice of engineering could be narrowed enough to secure a satisfactory solution of the problem. Actually, corporations—and probably partnerships—do not practice engineering, but rather offer the services of engineers. And presumably this concept could be given legal status by an amendment to a state's corporation law permitting the offering of such engineering services so long as the men in responsible charge of the engineering work are licensed professional engineers.

Mr. McCawley's contention that the legally correct approach to corporate practice of engineering is by way of a state's corporate practice act is obviously worth investigation. Legality, however, is not the sole point at issue, nor the fundamental one, which is more nearly that of assuring that corporations are subject to controls that provide adequate safeguards for the public safety and welfare.

The attempt last year, for example, to amend the New York license law foundered on this question of controls because the bill stipulated that all officers and directors of a corporation be licensed engineers. Such a requirement is completely unrealistic, except to make corporate engineering services impracticable. By the same token, some of the proposals made by corporation proponents in the past have also been unrealistic.

So the problem remains, for men of goodwill on both sides of the question to compose their differences with the sole focus on safeguarding the public safety and welfare. That this means eventually permission for corporations to offer engineering services seems certain. Too many states have already made this decision to countenance any other conclusion. But composing differences will also require acceptance of such state controls by corporations as to make them as accountable for their actions as any engineering partnership or individual engineer.

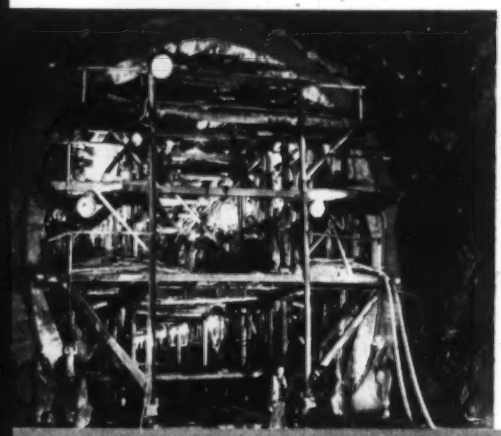
Mr. McCawley's legal suggestion is nevertheless, well worth pondering. Approaching the problem of corporate engineering by way of a state's corporation law may indeed bring its solution nearer.

The actual solution will, however, not be achieved until the opposing proponents within the profession compose their differences on a public welfare platform. Unless, of course, one side or the other musters enough political power to force its own views through the legislature. And that would be no proper solution, either from the professional or the public welfare standpoint.

unique set of concreting conditions here...

Underground powerhouse of Hydro-Quebec's Bersimis-Lac Cassé project, some 450 miles northeast of Montreal, where 1,200,000 horsepower of electricity will be generated. Concrete produced with Pozzolith at central batching plant by Dufresne Engineering, Ltd.

engineers of Bersimis Power Project employ **POZZOLITH** for vital three-way control



Tunnel almost 8 miles long driven through granite. *Upper View*—tunnel form in place; *Lower View*—manifold showing penstock No. 6, 7, 8.

In the production of 400,000 cubic yards of concrete for the 31-foot, 8-mile-long tunnel lining, powerhouse, and tailrace of the giant Bersimis power project, engineers faced the following concreting difficulties:

- Sand obtained at jobsite accidentally entrained air in the amount of 8-10%. Complete air detrainment was necessary and Pozzolith was used to entrain the proper amount of air.
- Initial retardation was desired to facilitate handling the concrete over long hauls in 8-yard dump trucks, then into pneumatic placers and pumped concrete machines.
- Once deposited against cold rock inside the tunnels—air temperature 50°—they wanted rapid gain in strength to permit early stripping and re-use of forms. (Actually forms were stripped 11 hours after concrete placing).

Engineers employed Pozzolith to most economically meet these conditions and in addition produce concrete with minimum shrinkage, necessary for tunnel work.

This was another project where Pozzolith provided three important controls: Minimum unit water content consistent with proper placement, control of air content and control of rate of hardening.

Ask us to demonstrate the many advantages of Pozzolith for control of concrete quality on your projects.

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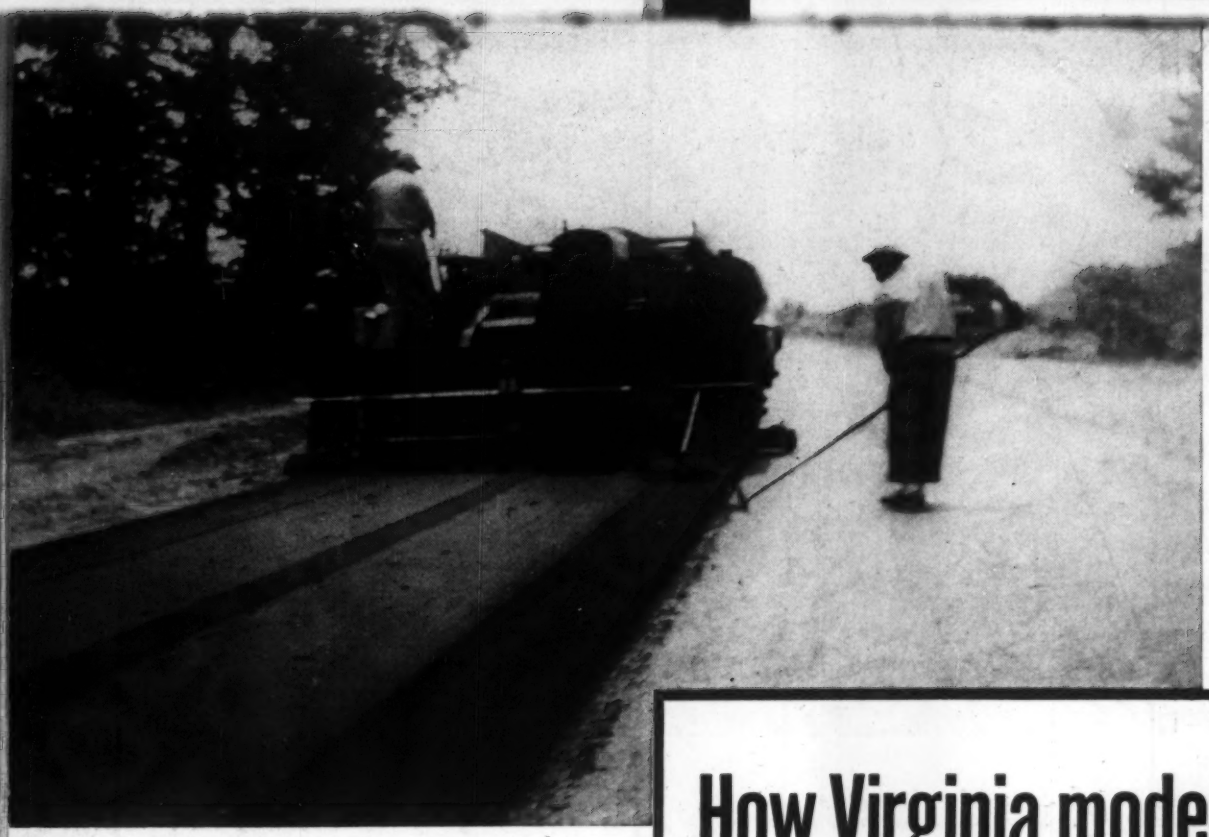

Final step, laying the hot-mix Texaco Sand Asphalt wearing surface, in widening and strengthening five miles of U. S. Route 258 in Virginia.

How Virginia modernized an out-of-date highway

Used by increasingly heavy truck traffic between tidewater Virginia and North Carolina, this 18-foot Virginia highway had become obsolete. How the State Highway Department widened and strengthened the narrow, rigid pavement will interest other engineers.

A "black base", consisting of hot-mix Texaco Asphaltic Concrete, was laid three feet wide and eight inches thick on both sides of the old pavement. This was followed by a binder course of finer graded Texaco Asphaltic Concrete, laid 24 feet wide in two layers. To complete the modernization project, a wearing surface of hot-mix Texaco Sand Asphalt was constructed approximately 1½ inches thick.

An 85-100 penetration Texaco Asphalt was used in the "black base", the asphaltic concrete binder course and the sand asphalt wearing surface. Like all Texaco Asphalt Cements, Cutback Asphalts and Slow-curing Asphaltic Oils, it is produced from scientifically selected crudes. The uniformly high quality and dependability of these products have earned and held the confidence of America's road builders for more than 50 years.

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